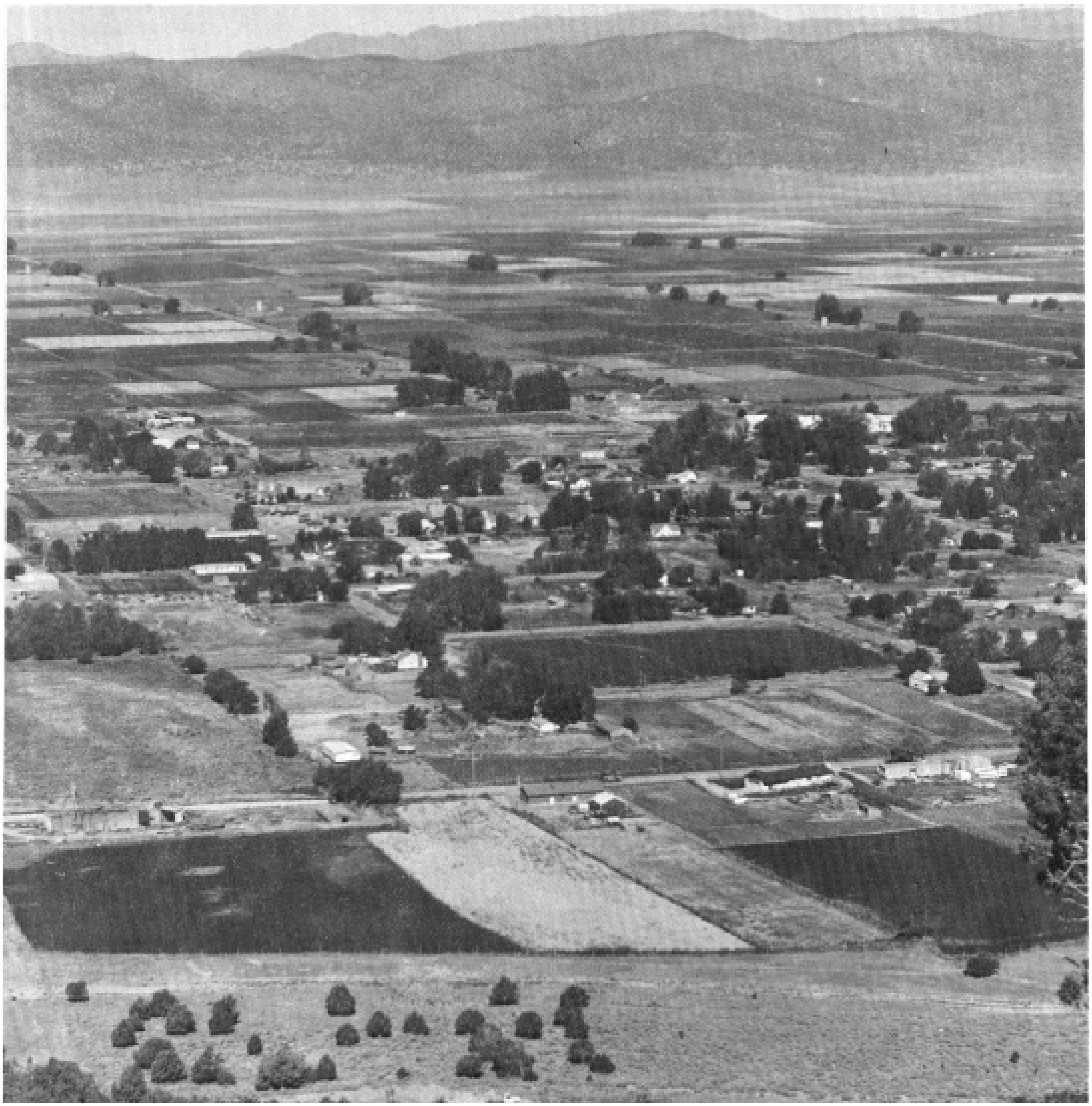
United States
Department of
Agriculture

Soil
Conservation
Service

In Cooperation with
United States Department
of Agriculture
Forest Service
United States Department
of the Interior
Bureau of Land Management
and the Utah Agricultural
Experiment Station

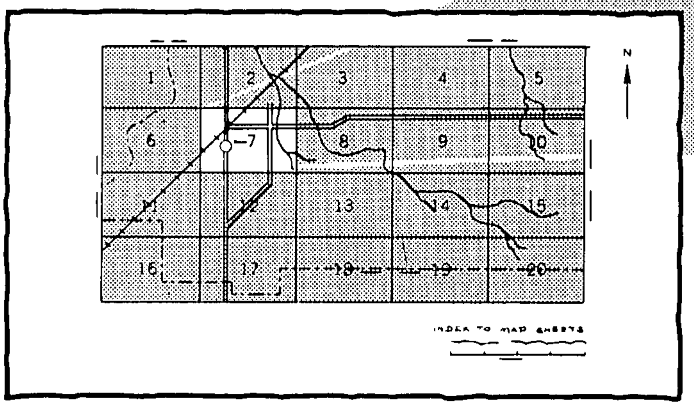
Soil Survey of Fairfield-Nephi Area Utah,

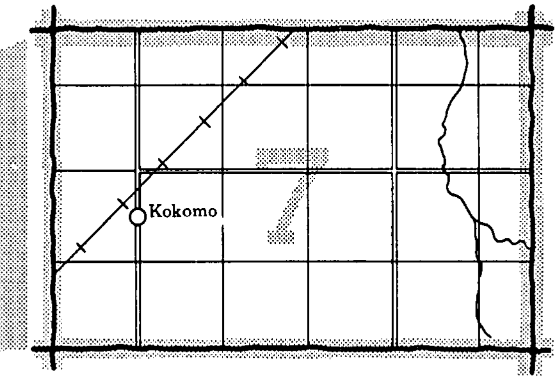
Parts of Juab, Sanpete, and Utah Counties



HOW TO USE

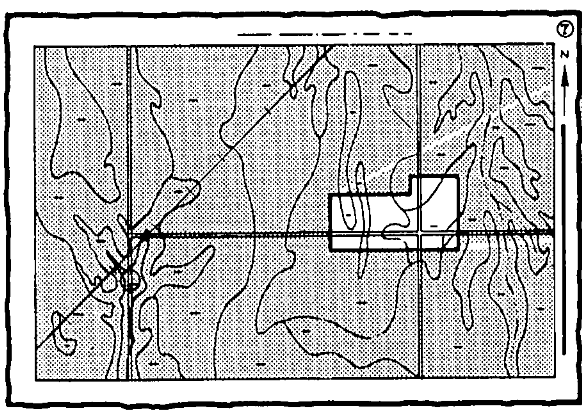
1. Locate your area of interest on the "Index to Map Sheets".

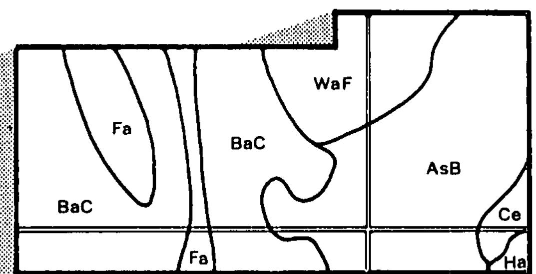




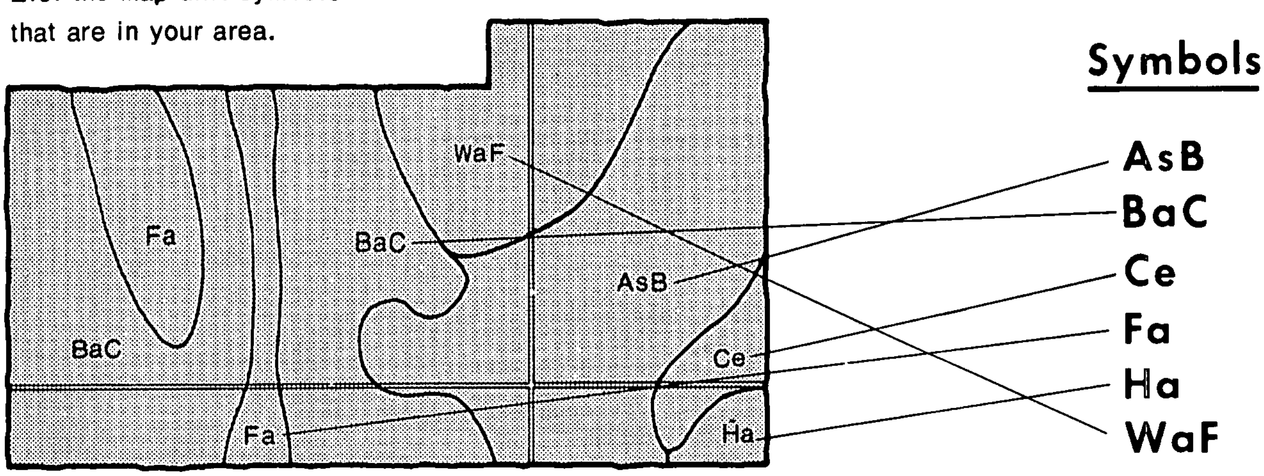
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



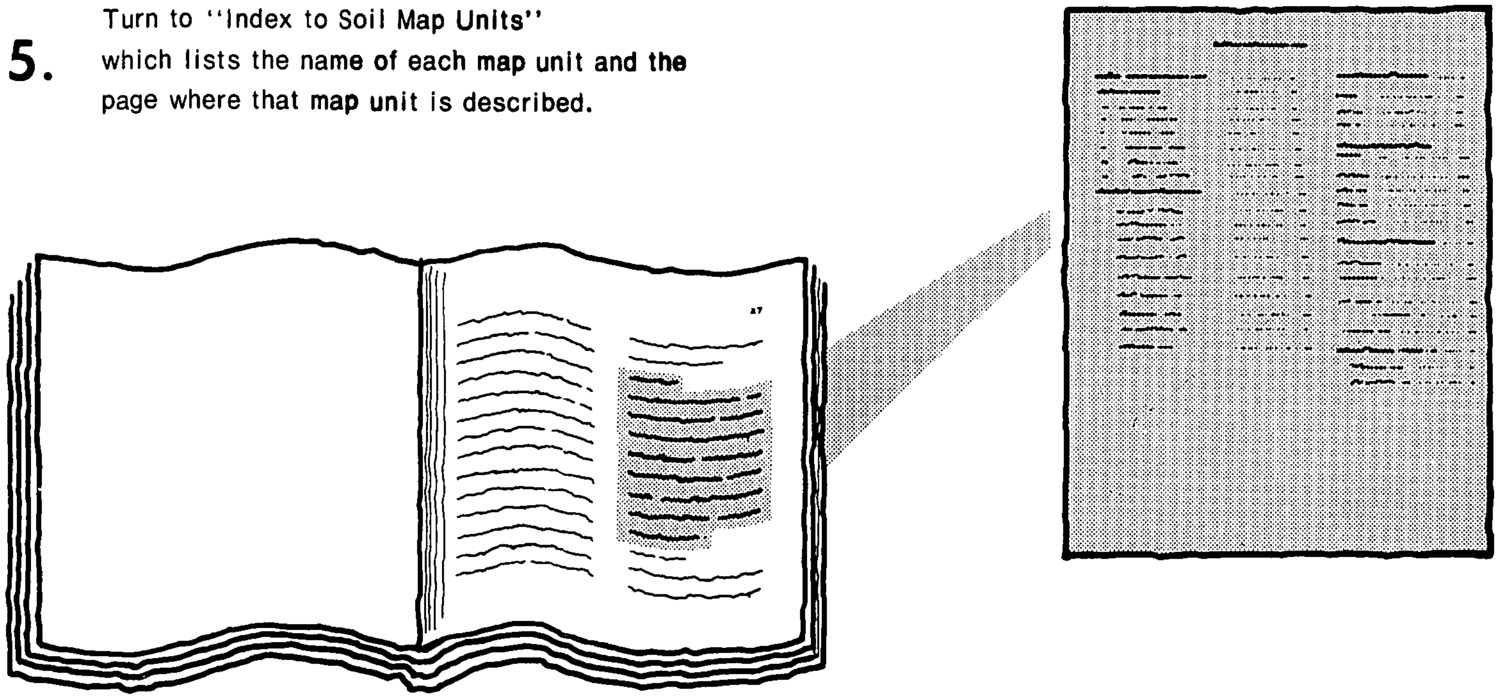


4. List the map unit symbols that are in your area.

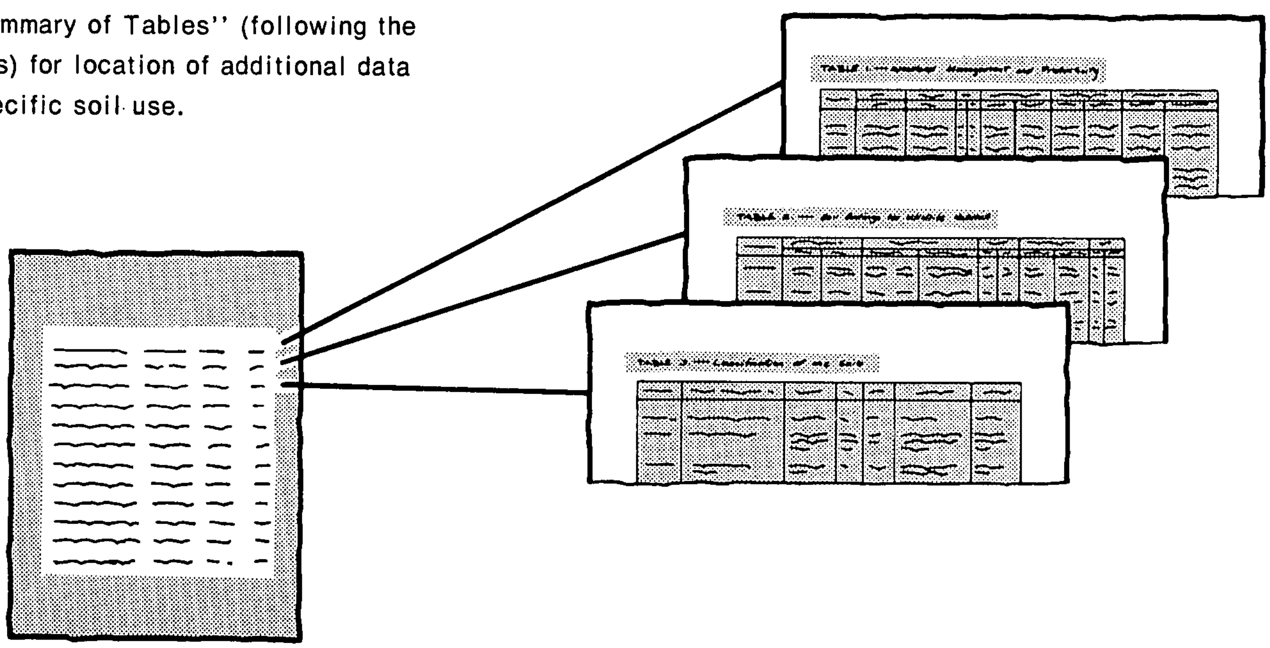


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1972-1980. Soil names and descriptions were approved in 1980. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1980. This survey was made by the United States Department of Agriculture, Soil Conservation Service and Forest Service; in cooperation with the Department of the Interior, Bureau of Land Management, and the Utah Agricultural Experiment Station. It is part of the technical assistance furnished to the Alpine, Juab, Timpanogos, and Nebo Soil Conservation Districts.

Cover: The City of Nephi on Juab soil. This soil is used to grow irrigated alfalfa and small grains.

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Issued June 1984

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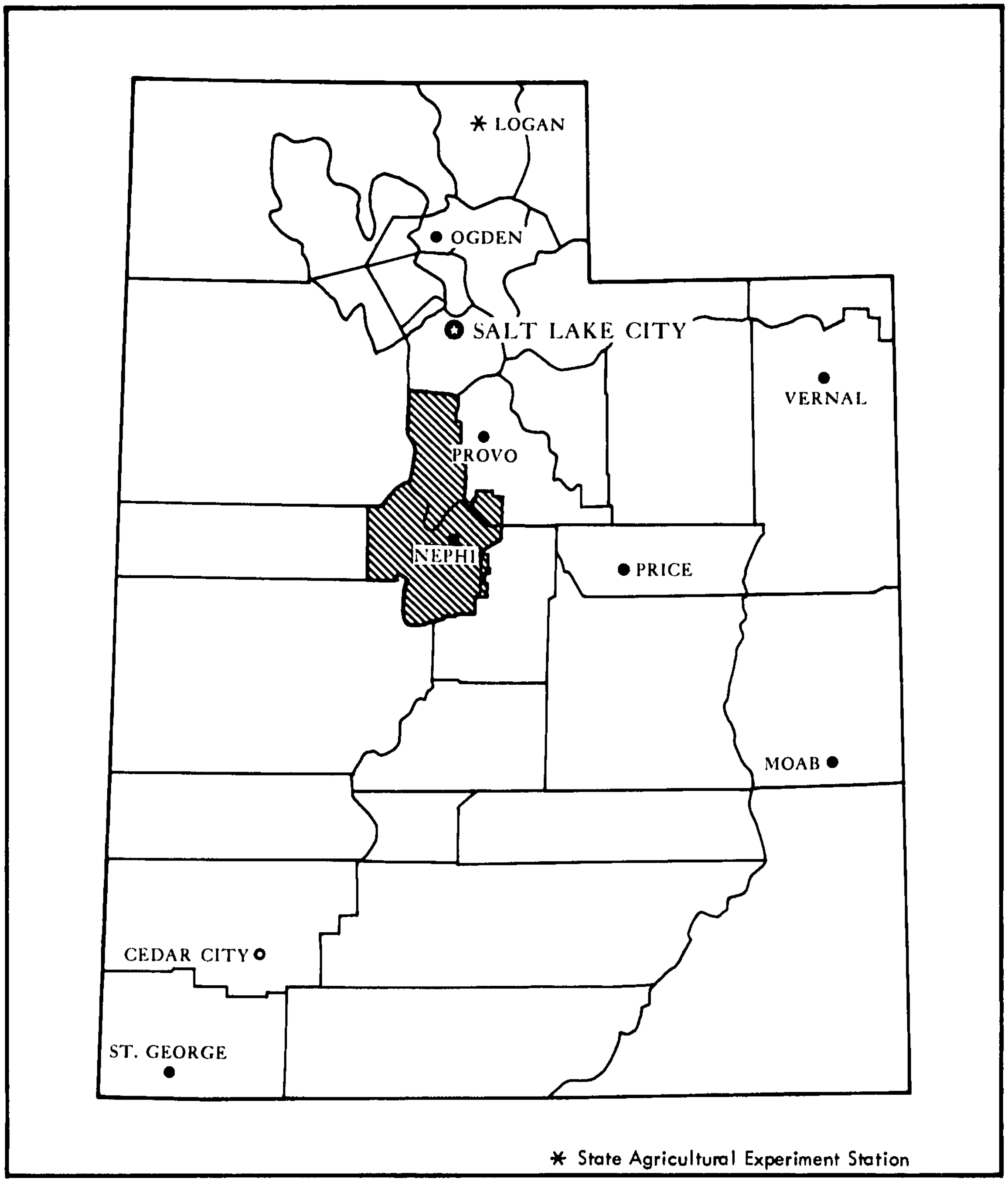
This soil survey contains information that can be used in land-planning programs in Fairfield-Nephi Area, Utah. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Francis T. Holt
State Conservationist
Soil Conservation Service



Location of Fairfield-Nephi Area in Utah: Parts of Juab, Sanpete, and Utah Counties.

soil survey of
Fairfield-Nephi Area, Utah Parts of Juab, Sanpete, and Utah Counties

by Darryl L. Trickler and Darrel T. Hall, Soil Conservation Service

Fieldwork by Darryl L. Trickler, Darrel T. Hall,
John L. Swenson, Jr., Robert H. Fish, and James C. Whitmore,
Soil Conservation Service, and Douglas C. Muir and Daniel M. Larsen,
Forest Service.

United States Department of Agriculture, Soil Conservation Service
and Forest Service, in cooperation with the Department of the Interior,
Bureau of Land Management, and the Utah Agricultural Experiment Station

general nature of the survey area

The Fairfield-Nephi Area is located in central Utah and consists of the western part of Utah County, the eastern part of Juab County, and a small part of Sanpete County that joins the eastern side of Juab County and is in Uinta National Forest.

The upper part of the survey area is bordered by Salt Lake County to the north, Tooele County to the west, and Utah Lake to the east. The lower part of the survey area extends west in Juab County beyond the West Tintic Mountains and the Little Sahara Recreation Area. It is bordered by Millard County to the south. In Sanpete County the survey area extends to the eastern edge of the San Pitch Mountains and Mount Nebo in the Uinta National Forest.

The survey area consists of about 1,383,305 acres, or 2,161 square miles. In the survey area 886,781 acres, or 1,385 square miles, is in Juab County; 477,385 acres, or 746 square miles, is in Utah County; and 19,139 acres, or 30 square miles, is in Sanpete County.

Most of the survey area is used as rangeland for grazing cattle and sheep. The major dryfarmed and irrigated cropland is in Goshen Valley, Juab Valley, and Dog Valley and in the northern end of Cedar Valley. The major crops grown are dryfarmed wheat and alfalfa hay and irrigated alfalfa hay, pasture, wheat, barley, and corn used for silage. Some cherry, peach, and apple orchards are around the town of Goshen.

The major water bodies are Utah Lake in Utah County, Mona Reservoir in Juab County, and Sevier Bridge Reservoir in Juab and Sanpete Counties. Utah Lake receives the drainage from the northern part of the survey area. This water is used mainly for irrigation and culinary use in Salt Lake County. Mona Reservoir receives drainage from the northeastern part of Juab County and is used to irrigate the southern part of Goshen Valley. The Sevier River receives drainage from the southern part of the state. It provides irrigation water for Delta.

The lowest elevation, at Utah Lake, is about 4,488 feet above sea level. The highest elevation is the top of Mount Nebo, which is 10,899 feet above sea level. The prehistoric Lake Bonneville was 5,150 feet above sea level. Cedar Valley, Goshen Valley, parts of Juab Valley, and the southern part of Tintic Valley were either at the same level as Lake Bonneville or below it.

The largest community in the survey area is Nephi, which has a population of about 2,700. It is the county seat of Juab County. Nephi is both agricultural and

industrial. The other communities in the survey area are small and, except for Eureka, are mostly agricultral. Eureka is a mining community.

climate

By E. Arlo Richardson, state climatologist, Utah Department of Agriculture.

The climate of the Fairfield-Nephi soil survey area is controlled by the same general circulation pattern as the rest of Utah. This climate, however, is modified by local topographic conditions. Mainly, the higher mountains extend in a north-south direction and are in the eastern part of the survey area. They rise to an elevation of 8,500 to 9,500 feet. Several minor, short mountain chains, oriented in the same general direction and separated by low valleys, are in the western part.

These mountains appreciably modify both the precipitation and temperature patterns. The normal annual precipitation (fig. 1) generally increases from west to east, but the minor mountain barriers modify this pattern. Accumulation ranges from only 8 inches a year in the extreme west to a little over 40 inches a year near the tops of the higher mountains in the northern part of the survey area.

The October-April precipitation (fig. 2) is principally from Pacific storm fronts and occasional late fall and early spring lows. The winter precipitation ranges from about 5 inches in the extreme western part of the survey area to nearly 30 inches at the higher elevations. The lifting action of the mountain barriers, which normally follows the general direction of the fronts, accentuates the increase of precipitation as elevation increases.

The moisture that falls during the growing season, from May to September (fig. 3), ranges from a low of little more than 3 inches in the extreme west to about 10 inches at higher elevations. This is the result of late spring and early fall lows and the summer thunderstorm activity, which is the result of a flow of moisture primarily from the Gulf of Mexico.

Most of the winter moisture at higher elevations falls as snow and supplies the irrigation water for the lower valley farms. Average annual snowfall ranges from a little more than 20 inches a year near the southern end of Utah Lake to more than 100 inches a year at higher elevations. The warming effect of Utah Lake tends to reduce the accumulated snowfall in that area.

Average temperatures also vary markedly with changes in elevation. The tendency for a strong winter inversion caused by cold air flowing down the mountain slopes and collecting in the bottoms of the valleys is strong in this area. The average top of these winter inversions ranges from 600 to 1,000 feet above the valley floor. In general, the highest temperatures in the area are near the top of the inversion during the winter season. Tables 1 and 2 summarize the temperature regimes and precipitation data at Elberta and Levan stations in the survey area. These stations are in the inversion zone of the lower valley.

The length of the growing season as shown on the map (fig. 4) can be roughly related to these average annual temperatures. The temperatures increase near the top of the inversion and then decrease above. In general, the length of the growing season ranges from 160 days in the extreme southwestern part of the area to less than 60 days at the higher mountain elevations.

Table 3 gives the probability of the freeze dates in spring and fall recorded at Elberta and Levan, Utah. These dates vary not only with the character of the season but with the elevation, aspect, and other local influences at any particular site.

Table 4 gives estimates of the montly pan evaporation during the period of May through October for three locations: Elberta, Nephi, and Levan. These estimates are based upon equations derived for the state which uses climate data measured at each site. The seasonal evaporation is much less at Elberta, only 37 inches, because of its nearness to Utah Lake. The evaporation for the corresponding periods at Nephi and Levan is 58 and 55 inches, respectively.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and the kinds of rock. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data

are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, rangeland and woodland managers, engineers, planners, developers and builders, home buyers, and others.

This survey was mapped at two levels of detail. At the most detailed level, map units are narrowly defined. This means that soil boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Soil boundaries were plotted and verified at wider intervals. In the soil map legend, narrowly defined units are indicated by symbols in which the first letter is a capital, and the second is a lower case. For broadly defined units, the first and second letters are capitals. The detail of mapping was selected to meet the anticipated long-term use of the survey, and the mapping units were designed to meet the needs for that use.

Soil map units in the National Forest Lands are somewhat more broadly defined than map units on private lands. The Forest Service mapping is intended for broad-land management planning. Because of this intended use, many soil interpretations were not made for those map units on National Forest land.

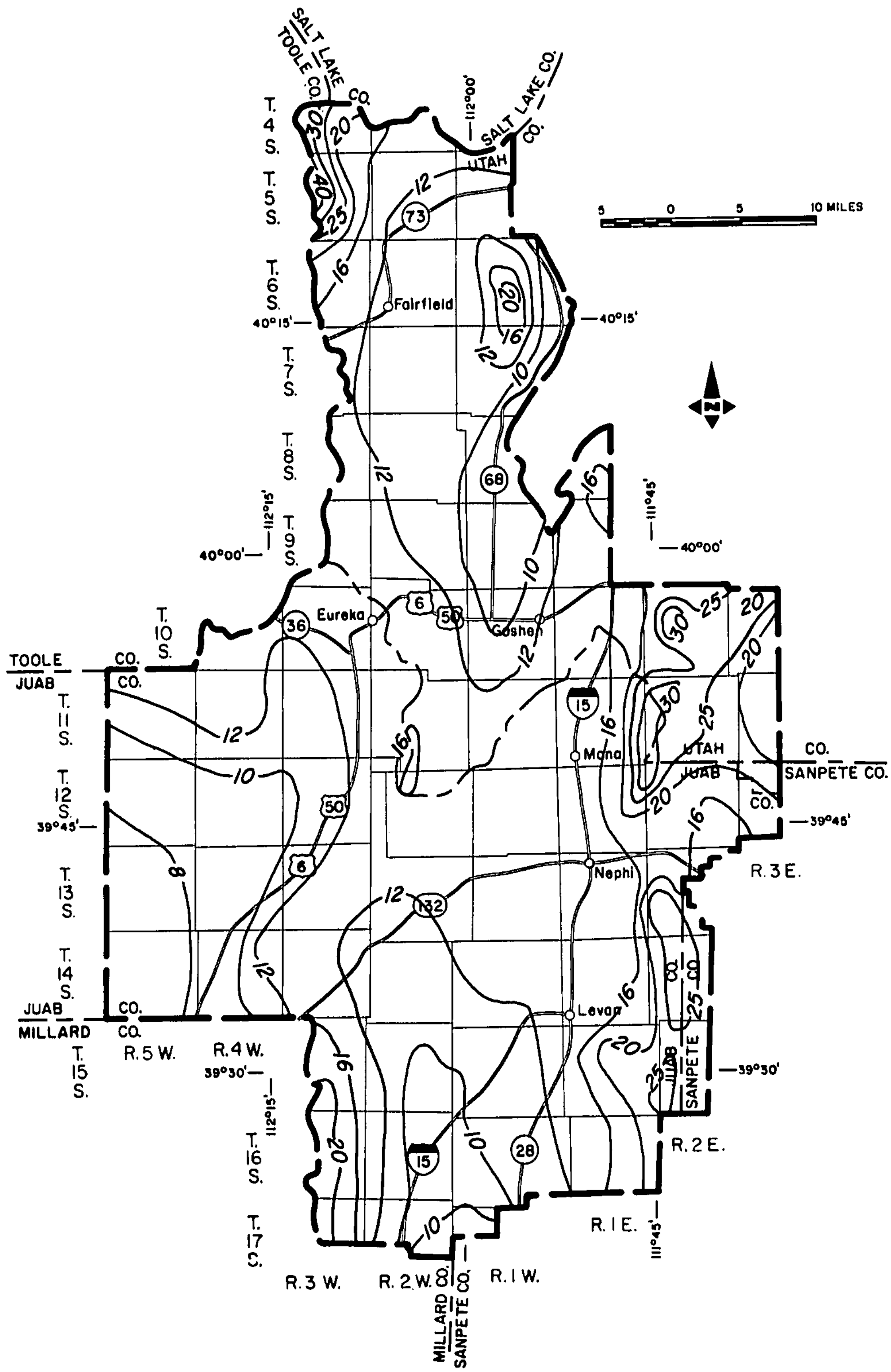


Figure 1.—Normal annual precipitation in inches.

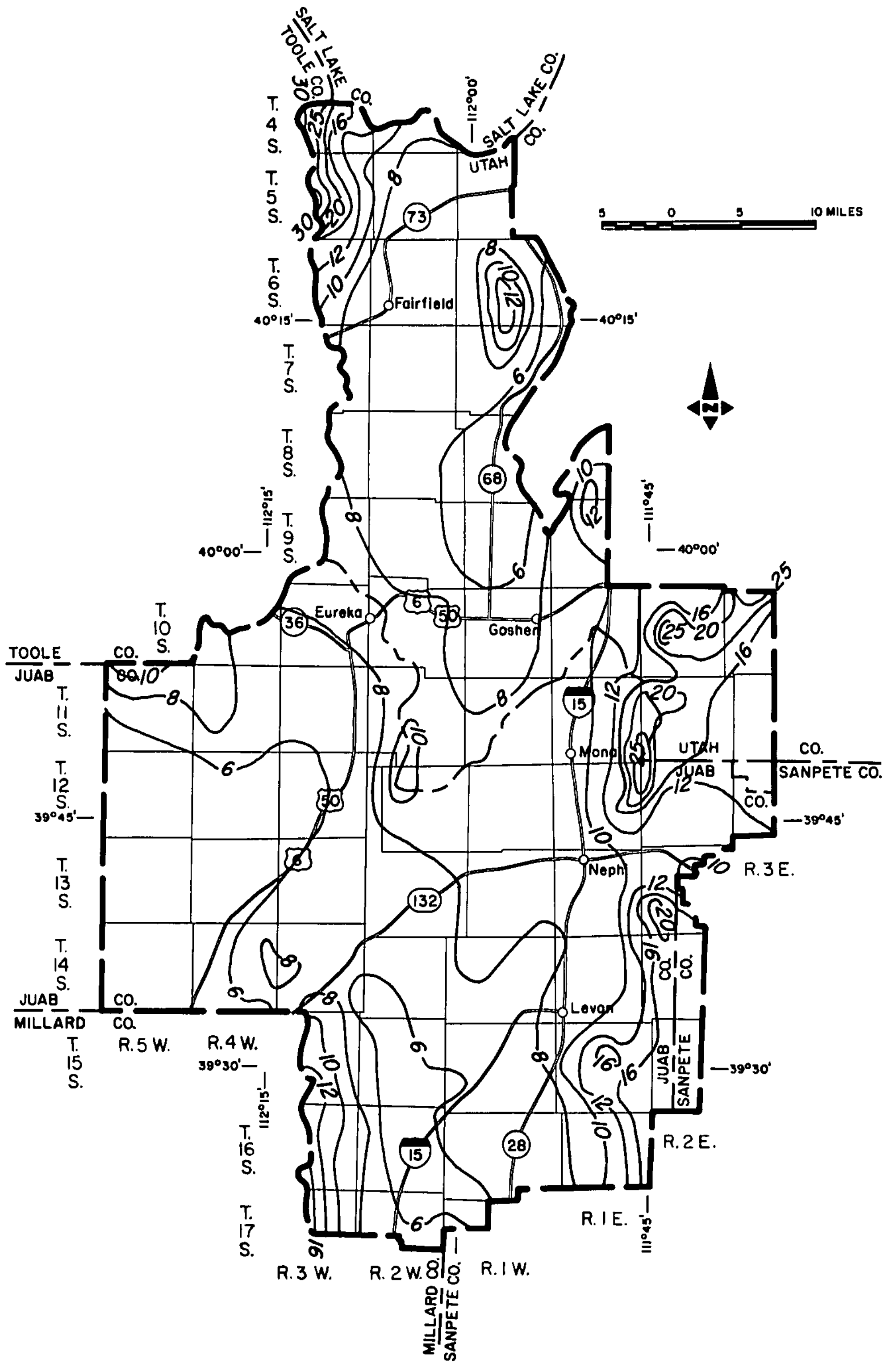


Figure 2.—October-April normal precipitation in inches.

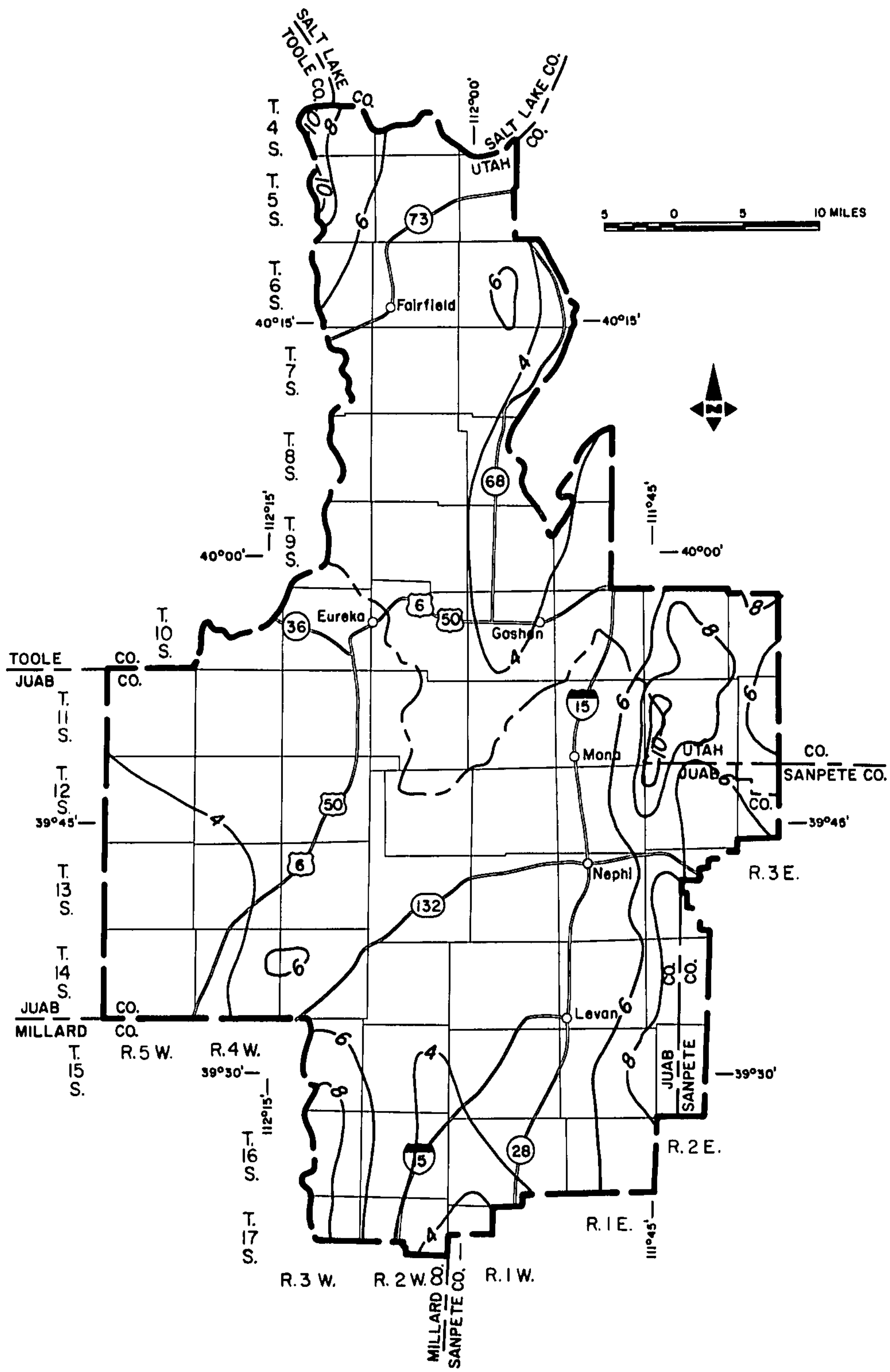


Figure 3.—May-September normal precipitation in inches.

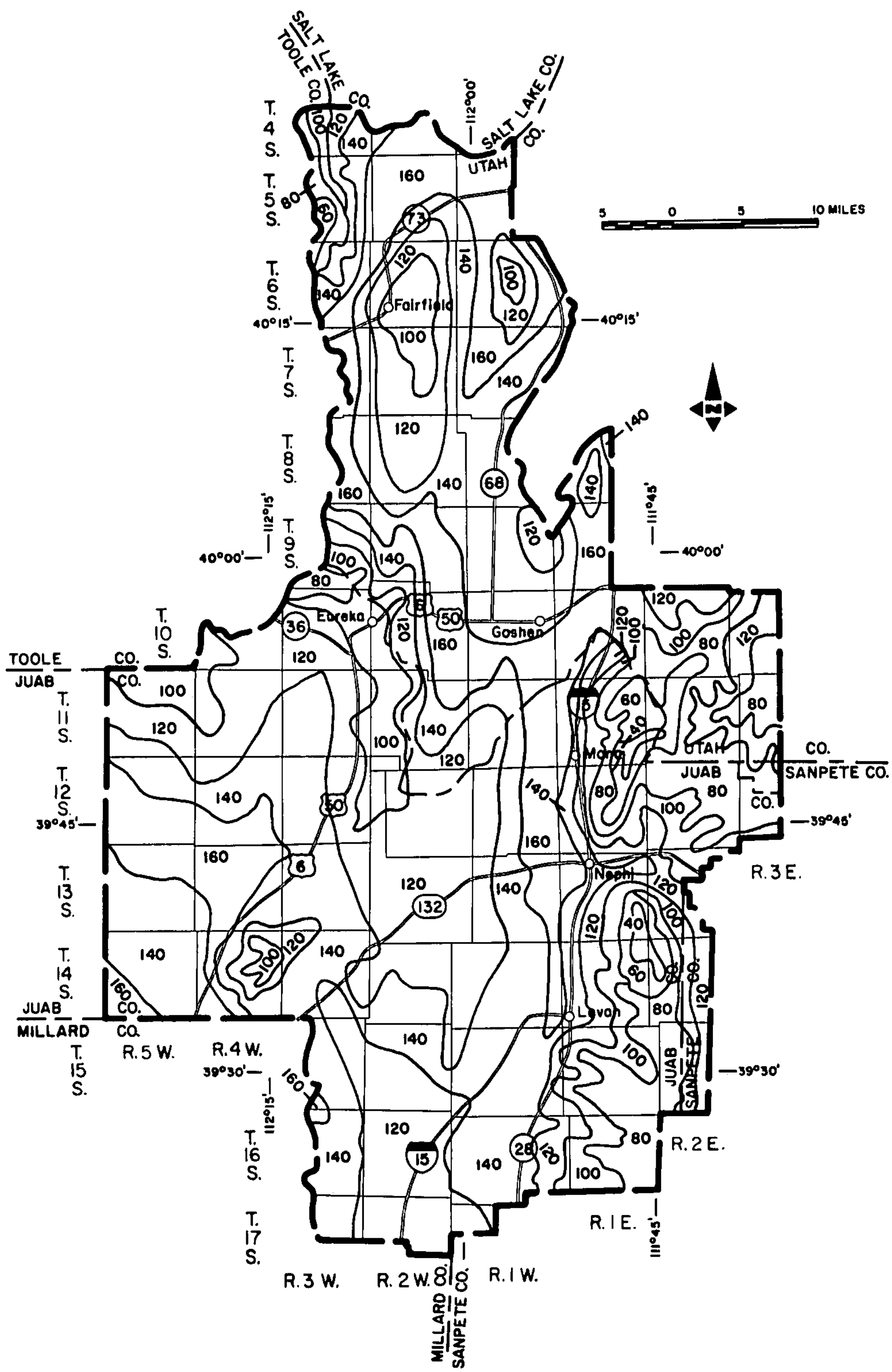


Figure 4.—Average length, in days, of the freeze-free season.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The suitability of the map unit, for *cultivated crops, urban uses, rangeland,* and *recreation areas* is discussed. Cultivated crops are those grown extensively in the survey area. Range refers to land that produces vegetation for grazing by domestic livestock. Urban uses include residential, commercial, and industrial developments. Recreation areas include campsites, picnic areas, ballfields, areas for nature study, wilderness, and other areas that are subject to heavy foot traffic.

soil descriptions

DOMINANTLY POORLY DRAINED AND SOMEWHAT POORLY DRAINED, LEVEL SOILS ON FLOOD PLAINS AND LAKE PLAINS

Only one map unit is in this broad category. It makes up about 3 percent of the survey area. The soils are level. The native vegetation is mainly grasses, sedges, and greasewood. Elevation is 4,485 to 5,200 feet. The average annual precipitation is 8 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

The soils in this group are very deep and poorly drained and somewhat poorly drained. They formed in alluvium and lake sediment derived dominantly from limestone, sandstone, and quartzite.

This group is used as rangeland and for wildlife habitat and wet-meadow hay.

1. Benjamin-Roshe Springs-Saltair

Very deep, poorly drained and somewhat poorly drained, level soils; on flood plains and lake plains

This map unit is in Goshen Valley, Juab Valley, and Mills Valley. It is mainly on flood plains and lake plains. Slope is 0 to 2 percent. The vegetation in the low saline areas of the Benjamin soils is mainly sedges, western wheatgrass, basin wildrye, and tufted hairgrass. Vegetation in the moderately saline areas of the Benjamin and Saltair soils is mainly inland saltgrass, alkali sacaton, alkali bluegrass, sedges, and black greasewood. The vegetation on Roshe Springs soils is mainly sedges, tufted hairgrass, and rushes. Elevation is 4,485 to 5,200 feet. The average annual precipitation is about 8 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 3 percent of the survey area. It is about 30 percent Benjamin and similar soils, 25 percent Roshe Springs and similar soils, and 20 percent Saltair soils. The remaining 25 percent is soils of minor extent.

Benjamin soils are on flood plains. These soils are very deep and somewhat poorly drained. They formed in alluvium derived dominantly from limestone, sandstone, and quartzite. The surface layer is grayish brown silty clay loam. Below this to a depth of 60 inches or more, the soils are grayish brown, light brownish gray, or pale brown clay. In some areas Benjamin soils are moderately saline and alkali affected. A fluctuating water table is at a depth of 30 to 60 inches.

Roshe Springs soils are on flood plains or low lake plains. These soils are very deep and poorly drained. They formed in alluvium and lake sediment derived dominantly from limestone, sandstone, and quartzite. The surface layer is gray silt loam and loam. Below this to a depth of 60 inches or more, the soils are light gray or gray loam. A water table ranges from the surface to a depth of 24 inches. Flooding is common.

Saltair soils are on lake plains. These soils are very deep and poorly drained. They formed in alluvium and lake sediment derived dominantly from limestone, sandstone, and quartzite. The surface layer is gray and dark gray silt loam. Below this to a depth of 60 inches or more, the soils are light brownish gray and grayish brown silty clay loam. These soils are strongly salt and alkali

affected. A water table ranges from the surface to a depth of 12 inches.

Of minor extent in the unit are the poorly drained Provo Bay soils; the somewhat poorly drained Bramwell and Kirkham soils; the moderately well drained to poorly drained Aquic Ustifluvents; and the well drained Harding, Mellor, and Manassa soils, and Xerertic Torriorthents.

This unit is used mainly for rangeland and wildlife habitat, but smaller areas with a lower water table are used for pasture. Most of this unit is used for semiwet- and wet-meadow pasture. The Benjamin and similar soils are used for irrigated cropland in some areas. The Roshe Springs soils are used for wet-meadow hay in some areas. Most of this unit is poorly suited to agricultural and urban uses. The soils are limited mainly by salt-alkali content and depth to a high water table.

These areas are used by such aquatic wildlife species as mallard, teal, and pintails for nesting and feeding. Other wetland species include blue heron, pelicans, mink, muskrat, red-winged blackbird, and marsh wren. Pheasant use wetlands as protective cover, especially during hard winters. Voles, mice, and other rodents inhabiting the area provide carnivores and raptors with adequate food supplies. These include red fox, badger, skunk, weasel, red-tailed hawk, and great horned owl. These areas are historical feeding areas for the peregrine falcon, an endangered species. Other important wildlife species include magpie, crow, raven, garter snake, bull snake, and leopard frog.

DOMINANTLY WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, LEVEL TO STEEP SOILS AND DUNE LAND ON LAKE PLAINS, LAKE TERRACES, AND ALLUVIAL FANS IN A SEMIARID CLIMATE ZONE

This group consists of five map units. It makes up about 30 percent of this survey area. The soils in this group are level to steep. The native vegetation is mainly grasses, shrubs, and some juniper trees. Elevation is 4,500 to 6,000 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

The soils in this group are very deep to shallow and well drained or somewhat excessively drained. They formed in lake sediment, alluvium, and eolian sand derived dominantly from limestone, sandstone, shale, quartzite, and igneous rocks.

This group is used as rangeland and for wildlife habitat, irrigated crops, hunting, and recreation.

2. Cheebe-Harding-Mellor

Very deep, well drained, level and gently sloping soils; on flood plains, lake terraces, and alluvial fans

This map unit is in Cedar Valley and Goshen Valley and on wash along Dog Valley. It is mainly on flood plains, lake terraces, and alluvial fans. Slope is 0 to 4 percent. The vegetation on the Cheebe, Harding, and Mellor soils is mainly black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. Where the Cheebe soil has a sandy surface layer, vegetation is bluebunch wheatgrass, big sagebrush, Indian ricegrass, and needleandthread. Elevation is 4,500 to 5,100 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 4 percent of the survey area. It is about 35 percent Cheebe soils, 20 percent Harding soils, and 15 percent Mellor soils. The remaining 30 percent is soils of minor extent.

Cheebe soils are on lake terraces. These soils are very deep and well drained. They formed in lake sediment derived dominantly from limestone, sandstone, and shale. The surface layer is light brownish gray silty clay loam or fine sandy loam. The subsoil is light gray silty clay. Below this to a depth of 60 inches or more, the soils are white silty clay loam and light gray clay. These soils are very strongly alkali affected and very strongly calcareous.

Harding soils are on lake terraces and flood plains. These soils are very deep and well drained. They formed in lake sediment and alluvium derived dominantly from limestone, sandstone, and shale. The surface layer is pale brown silt loam. The subsoil is pale brown silty clay. Below this to a depth of 60 inches or more, the soils are pale brown silty clay or light gray silt loam. These soils are very strongly alkali affected.

Mellor soils are on lake terraces, flood plains, and alluvial fans. These soils are very deep and well drained. They formed in lake sediment and alluvium derived dominantly from sandstone, limestone, and shale. The surface layer is light brownish gray silt loam. The subsoil is pale brown and light gray silty clay loam. Below this to a depth of 60 inches or more, the soils are pale brown silty clay loam. These soils are very strongly alkali affected.

Of minor extent in the unit are Woodrow, Genola, Thiokol, Goldrun, and Linoyer soils that are well drained. Some Bramwell soils that are somewhat poorly drained and Provo Bay soils that are poorly drained are also in this map unit.

The unit is used mainly as rangeland and for wildlife habitat. Some areas of the Cheebe soils are used to grow irrigated sod. This unit is poorly suited to crops because these soils are very strongly alkaline. It is not suited to range seeding because precipitation is low. Native vegetation should be protected from overgrazing.

The primary wildlife are those species directly associated with agriculture. These include pheasant, cottontail rabbit, mourning doves, and meadowlark. They are prey for such predators as coyote, fox, skunk, red-tailed hawk, sparrow hawk, and marsh hawk. Other wildlife species to be found in the area are Brewer's sparrow, jackrabbit, and ground squirrels.

3. Genola-Linoyer-Medburn

Very deep, well drained, level to sloping soils; on alluvial fans, lake terraces, and flood plains

This map unit is in Cedar Valley, Goshen Valley, Mills Valley, and the south end of Juab Valley and is north of Lynndyl. This map unit is mainly on alluvial fans, lake terraces, and flood plains. Slope is 0 to 10 percent. The vegetation on this unit is mainly bluebunch wheatgrass, needleandthread, Indian ricegrass, big sagebrush, and squirreltail. Elevation is 4,500 to 5,400 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 11 percent of the survey area. It is about 35 percent Genola soils, 30 percent Linoyer soils, and 15 percent Medburn soils. The remaining 20 percent is soils of minor extent.

The Genola soils are on alluvial fans and flood plains, Linoyer soils are on lake terraces and alluvial fans, and Medburn soils are on alluvial fans. These soils are very deep and well drained. They formed in alluvium and lake sediment derived dominantly from sandstone, limestone, and igneous rocks.

In the Genola soils the surface layer is light brownish gray silt loam. Below this to a depth of 60 inches or more, the soils are light brownish gray and pale brown silt loam.

In the Linoyer soils the surface layer is pale brown very fine sandy loam. Below this to a depth of 60 inches or more, is very pale brown very fine sandy loam and silt loam.

In the Medburn soils the surface layer is pale brown fine sandy loam. Below this to a depth of 60 inches or more, the soils are light yellowish brown and very pale brown fine sandy loam. Gravelly sandy loam is below a depth of 24 inches in some areas.

Of minor extent in the unit are the Duggins, Goldrun, Hiko Peak, Mellor, Orcky, Shabliss, Wales, and Woodrow soils.

This unit is used mainly as rangeland and for wildlife habitat and irrigated crops of small grains, alfalfa hay, and pasture. This unit is suited to irrigated crops. It is poorly suited to nonirrigated crops because precipitation is low. Native vegetation should be protected from overgrazing. This unit is suited to range seeding except during extremely dry years.

The primary wildlife are those species directly associated with agriculture. These include pheasant, cottontail rabbit, mourning doves, and meadowlark. They are prey for such predators as coyote, fox, skunk, red-tailed hawk, sparrow hawk, and marsh hawk. Other wildlife species to be found in the area are Brewer's sparrow, jackrabbit, and ground squirrels. In the upper fringes of this area, vegetative cover interspersed with rock ledges and outcrops provides good habitat for rattlesnakes.

4. Truesdale-Linoyer

Moderately deep and very deep, well drained, nearly level to sloping soils; on alluvial fans and lake terraces

This map unit is in the Tintic Valley. It is mainly on alluvial fans and lake terraces. Slope is 1 to 10 percent. The vegetation is mainly bluebunch wheatgrass, needleandthread, Indian ricegrass, big sagebrush, and squirreltail. Elevation is 5,000 to 6,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 3 percent of the survey area. It is about 40 percent Truesdale and similar soils and 30 percent Linoyer and similar soils. The remaining 30 percent is soils of minor extent.

Truesdale soils are on alluvial fans. These soils are moderately deep and well drained. They formed in alluvium derived dominantly from sandstone, limestone, and igneous rocks. The surface layer is pale brown fine sandy loam. Below this to a depth of 25 inches, the soils are very pale brown fine sandy loam. A silica cemented hardpan is at a depth of about 25 inches.

Linoyer soils are on alluvial fans and lake terraces. These soils are very deep and well drained. They formed in alluvium and lake sediment derived dominantly from sandstone, limestone, and igneous rocks. The surface layer is pale brown very fine sandy loam. Below this to a depth of 60 inches or more, the soils are very pale brown very fine sandy loam and silt loam.

Of minor extent in the unit are the Genola, Hiko Peak, Sanpete, Shabliss, Spager, and Medburn soils.

This unit is used mainly as rangeland and for wildlife habitat.

This unit is suitable for irrigated crops if water is made available. Precipitation is not sufficient for nonirrigated crops. Native vegetation should be protected from overgrazing. The unit is suited to range seeding except during extremely dry years.

The primary wildlife are those species directly associated with agriculture. These include pheasant, cottontail rabbit, mourning dove, and meadowlark. These species are prey for such predators as coyote, fox, skunk, red-tailed hawk, sparrow hawk, and marsh hawk. Other wildlife species in the area are Brewer's sparrow, jackrabbit, and ground squirrels. In the upper fringes of this area, vegetative cover interspersed with rock ledges and outcrops provides good habitat for rattlesnakes.

During periods of exceedingly hard winters, some mule deer are in this area. Rabbit populations, especially jackrabbit, provide a major part of eagles' food requirements, primarily during the winter. Some lizard species are in the area during the summer months.

5. Jericho-Hiko Peak-Medburn

Shallow and very deep, well drained, gently sloping to steep soils; on alluvial fans

This map unit is in Tintic Valley and Little Valley. It is mainly on alluvial fans. Slope is 2 to 25 percent. The vegetation on the Jericho soil is mainly Indian ricegrass, Utah juniper, bluebunch wheatgrass, and black sagebrush. The vegetation on the Hiko Peak soil is mainly black sagebrush, shadscale, Indian ricegrass, and needleandthread. The vegetation on the Medburn soil is mainly needleandthread, Indian ricegrass, big sagebrush, and squirreltail. Elevation is 4,600 to 5,800 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 8 percent of the survey area. It is about 30 percent Jericho soils, 20 percent Hiko Peak soils, and 20 percent Medburn and similar soils. The remaining 30 percent is soils of minor extent.

Jericho soils are on alluvial fans. These soils are shallow and well drained. They formed in alluvium derived dominantly from igneous rocks. The surface layer is pale brown gravelly fine sandy loam. Below this the soils are very pale brown very gravelly fine sandy loam. A silica cemented hardpan is at a depth of 19 inches.

Hiko Peak soils are on alluvial fans. These soils are very deep and well drained. They formed in alluvium derived dominantly from limestone, quartzite, sandstone, and igneous rocks. The surface layer is pale brown stony sandy loam. Below this to a depth of 60 inches or more, the soils are very light yellowish brown gravelly sandy loam and pale brown very gravelly sandy loam.

Medburn soils are on alluvial fans. These soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone and igneous rocks. The surface layer is pale brown fine sandy loam. Below this to a depth of 60 inches or more, the soils are light yellowish brown and very pale brown fine sandy loam. Gravelly sandy loam is below a depth of 24 inches in some areas.

Of minor extent in the unit are the Shabliss, Wales, Spager, Genola, Saxby, Linoyer, and Jericho soils.

This unit is used mainly as rangeland and for wildlife habitat.

This unit is poorly suited to most agricultural and urban uses because the soils are shallow to a hardpan and because stones and gravel are in the Jericho and Hiko Peak soils. Native vegetation should be protected from overgrazing. The Jericho and Hiko Peak soils are poorly suited to range seeding. The Medburn soils are well suited to range seeding. Roads, paths, and trails are somewhat difficult to construct and to maintain because of small stones, some steep slopes, and areas where the soil is shallow to a hardpan.

The primary wildlife use of this area is as winter range for deer. A few sagegrouse are in areas adjacent to wet meadow, by stream courses, or in areas where succulent forbs can be found during summer months. Bald and golden eagles winter in this area and feed primarily on jackrabbit. Other important wildlife species include coyote, fox, badger, ground squirrels, mice, Brewer's sparrow, lizard, and rattlesnake.

6. Goldrun-Dune land

Very deep, somewhat excessively drained, nearly level to sloping soils and Dune land; on lake terraces and alluvial fans

This map unit is north of Lynndyl. It is mainly on lake terraces and alluvial fans. Slope is 0 to 10 percent. The vegetation on the Goldrun soils is mainly Indian ricegrass, sand dropseed, and needleandthread. The Dune land is devoid of vegetation except for occasional clumps of grass or a few juniper trees between dunes. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 4 percent of the survey area. It is about 55 percent Goldrun soils and 35 percent Dune land. The remaining 10 percent is soils of minor extent.

Goldrun soils are on alluvial fans and lake terraces. These soils are very deep and somewhat excessively drained. They formed in eolian sands and alluvium derived dominantly from sandstone and igneous rocks. The surface layer is light gray loamy fine sand. Below this to a depth of 60 inches or more, the soils are very pale brown loamy fine sand and fine sand.

Dune land consists of ridges and intervening troughs of fine sand that shifts with the wind.

Of minor extent in the unit are the Saxby and Woodrow soils and Rock outcrop.

The Goldrun soil is used mainly as rangeland and for wildlife habitat. The Dune land is used mainly for recreation.

This unit is poorly suited to agricultural and urban uses. It is limited mainly by the unstable sandy soil and the high susceptibility to soil blowing. Native vegetation should be protected from overgrazing. This unit is not suited to range seeding because precipitation is low. The Dune land is well suited to some types of recreation.

The unique environment primarily supports small mammals and reptiles including mice, kangaroo rats, cottontail and jack rabbit, and several species of lizards. A population of scorpions is also in this unit.

DOMINANTLY WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, LEVEL TO STEEP SOILS ON ALLUVIAL FANS AND LAKE TERRACES IN A DRY, SUBHUMID CLIMATE ZONE

This group consists of two map units. It makes up about 15 percent of this survey area. The native vegetation is mainly grasses, sagebrush, bitterbrush, and juniper trees. Elevation is 4,500 to 7,000 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

The soils in this group are shallow and very deep and well drained or somewhat excessively drained. They formed in alluvium derived dominantly from limestone, sandstone, shale, quartzite, and igneous rocks.

This group is used for irrigated crops of alfalfa hay and small grains, nonirrigated small grains and alfalfa hay, and wildlife habitat and as rangeland.

7. Juab-Nephi

Very deep, well drained, level to sloping soils; on alluvial fans and lake terraces

This map unit is in Juab Valley, Dog Valley, and Furner Valley. Slope is 0 to 8 percent. The vegetation on the Juab soil is mainly bluebunch wheatgrass, Indian ricegrass, antelope bitterbrush, and Nevada bluegrass. The vegetation on the Nephi soil is mainly nonirrigated wheat and alfalfa hay. Elevation is 4,700 to 6,000 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 7 percent of the survey area. It is about 60 percent Juab and similar soils and 15 percent Nephi and similar soils. The remaining 25 percent is soils of minor extent.

Juab and Nephi soils are on alluvial fans and lake terraces. These soils are very deep and well drained. They formed in alluvium derived dominantly from limestone, sandstone, shale, and igneous rocks.

In the Juab soils the surface layer is brown loam. Below this to a depth of 60 inches or more, the soils are pale brown loam or silt loam.

In the Nephi soils the surface layer is brown silt loam. Below this to a depth of 42 inches, the soils are brown, strong brown, and light brown silty clay loam. Pink silt loam extends to a depth of 60 inches or more.

Of minor extent in the unit are the Genola, Moroni, Musinia, Ashdown, Parleys, Shabliss, Wales, Doyce, Donnardo, Calita, Borvant, Thiokol, Modoc, and Fridlo soils.

This unit is used mainly for irrigated crops of alfalfa hay and small grains and nonirrigated crops of small grains and alfalfa hay. It is also used as rangeland and for wildlife habitat.

This unit is suited to agricultural uses. It is limited by its water supply. Native vegetation should be protected from overgrazing. This unit is well suited to range seeding.

The primary wildlife are those species directly associated with agriculture, both irrigated and dry farmed. These species include pheasant, cottontail rabbit, mourning dove, meadowlark, magpie, red-tailed hawk, sparrow hawk, coyote, fox, badger, skunk, ground squirrels, mice, rattlesnakes, and garter snakes. Some deer use this unit for year-round range.

8. Donnardo-Borvant-Juab

Shallow and very deep, well drained and somewhat excessively drained, gently sloping to steep soils; on alluvial fans and lake terraces

This map unit is in Tintic Valley, Little Valley, Goshen Valley, Juab Valley, and Cedar Valley. Slope is 2 to 25 percent. The vegetation on the Donnardo soil is mainly bluebunch wheatgrass, black sagebrush, Indian ricegrass, and big sagebrush. The vegetation on the Borvant soil is mainly bluebunch wheatgrass, Indian ricegrass, Utah juniper, and black sagebrush. The vegetation on the Juab soil is mainly bluebunch wheatgrass, Indian ricegrass, antelope bitterbrush, and Nevada bluegrass. Elevation is 4,500 to 7,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 8 percent of the survey area. It is about 35 percent Donnardo and similar soils, 30 percent Borvant soils, and 10 percent Juab and similar soils. The remaining 25 percent is soils of minor extent.

Donnardo soils are on alluvial fans. These soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone, limestone, and quartzite. The surface layer is grayish brown stony fine sandy loam and brown very cobbly fine sandy loam. Below this to a depth of 60 inches or more, the soils are pale brown very cobbly loam and extremely cobbly fine sandy loam.

Borvant soils are on alluvial fans. These soils are shallow and somewhat excessively drained. They formed in alluvium derived dominantly from limestone and sandstone. The surface layer is dark grayish brown cobbly loam. Below this the soils are pale brown very gravelly loam. A lime cemented hardpan is at a depth of 19 inches.

Juab soils are on alluvial fans and lake terraces. These soils are very deep and well drained. They formed in alluvium and lake sediment derived dominantly from sandstone, limestone, shale, and igneous rocks. The surface layer is brown loam. Below this to a depth of 60 inches or more, the soils are pale brown loam or silt loam.

Of minor extent in the unit are the Calita, Doyce, Fontreen, Pober, Pibler, Mountainville, Wales, Taylorsville, Parleys, and Hillfield soils.

This unit is used mainly as rangeland and for wildlife habitat.

This unit is poorly suited to most agricultural and urban uses because the Borvant soil is shallow to a hardpan and because rock fragments are on the surface. Native vegetation should be protected from overgrazing. The Juab soils are well suited to range seeding. The Donnardo soils are fairly well suited to range seeding but are limited mainly by stones on the surface. The Borvant soils are not suited to range seeding because they are shallow to a hardpan and have low available water capacity. Roads, paths, and trails are somewhat difficult to construct and maintain because of stones, some steep slopes, and areas where the soil is shallow to a hardpan.

The primary use of this unit for wildlife is winter range for deer. Some deer inhabit this unit throughout the year. Other important wildlife species are coyote, fox, badger, bobcat, raven, magpies, warblers, and jackrabbit. Reptiles include rattlesnake, bull snake, garter snake, and lizard.

DOMINANTLY WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, SLOPING TO VERY STEEP SOILS AND ROCK OUTCROP ON HILLSIDES, RIDGES, AND MOUNTAINSIDES

This group consists of two map units. It makes up about 32 percent of this survey area. The native vegetation is mainly grasses, sagebrush, and Utah juniper. Elevation is 4,900 to 6,600 feet. The average annual precipitation is 8 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

The soils in this group are shallow. They are moderately deep and well drained and somewhat excessively drained. They formed in residuum derived dominantly from limestone, sandstone, conglomerate, shale, and igneous rocks.

This group is used as rangeland and for wildlife habitat and recreation.

9. Amtoft-Rock outcrop-Reywat

Shallow, well drained and somewhat excessively drained, sloping to very steep soils and Rock outcrop; on hillsides, ridges, and mountainsides

This map unit is on hillsides, ridges, and mountainsides throughout the survey area. Slope is 8 to 60 percent. The vegetation on the Amtoft and Reywat soils is mainly bluebunch wheatgrass, black sagebrush, Indian ricegrass, Utah juniper, and antelope bitterbrush. Elevation is 4,900 to 6,600 feet. The average annual precipitation is about 8 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 29 percent of the survey area. It is about 35 percent Amtoft and similar soils, 20 percent Rock outcrop, and 15 percent Reywat and similar soils. The remaining 30 percent is soils of minor extent.

Amtoft soils are on hillsides and ridges. These soils are shallow and somewhat excessively drained. They formed in residuum and colluvium derived dominantly from limestone, sandstone, and conglomerate. The surface layer is pale brown stony and gravelly loam. Below this the soils are light gray very cobbly loam and very gravelly fine sandy loam. Unweathered limestone is at a depth of 19 inches.

Rock outcrop consists of bare, exposed bedrock, mainly on points and ridges.

Reywat soils are on hillsides and mountainsides. These soils are shallow and well drained. They formed in residuum and colluvium derived dominantly from igneous rocks. The surface layer is dark brown very stony loam. Below this the soils are brown cobbly clay loam, light yellowish brown very cobbly clay loam and extremely cobbly clay loam. Unweathered igneous bedrock is at a depth of 17 inches.

Of minor extent in the unit are the shallow Lodar, Lundy, Saxby, Agassiz, and Borvant soils; the moderately deep Sandall and Sumine soils; and the very deep Lizzant, Bezzant, Donnardo, and Hiko Peak soils.

This unit is used mainly as rangeland and for wildlife habitat and recreation.

This unit is poorly suited to most agricultural and urban uses because it has steep slopes, large stones, shallow depth to bedrock, and Rock outcrop. Native vegetation should be protected from overgrazing. Range seeding is not practical because this unit has large stones and steep slopes. Roads, paths, and trails are difficult to construct and maintain because of the steep slopes and shallow depth to bedrock.

Wildlife in this unit is varied. Mule deer live here throughout the year. Coyote, fox, badger, and bobcat are the primary predators. Their prey are ground squirrels, mice, and an occasional yellowbelly marmot. Chukar partridge feed on the drier rocky slopes, which they share with rattlesnakes and tarantulas. Many songbirds, including bluebirds, finches, and sparrows, are in the area. Escarpments and ledges provide habitat for nesting and perching raptors, including the golden eagle and the peregrine falcon.

10. Xeric Torriorthents-Rock outcrop-Lodar

Shallow and moderately deep, well drained and somewhat excessively drained, sloping to very steep soils and Rock outcrop; on hillsides

This map unit is in the San Pitch Mountains. It is mainly on hillsides. Slope is 3 to 70 percent. The

vegetation on the Xeric Torriorthents is mainly birchleaf mountainmahogany, bluebunch wheatgrass, and Sandberg bluegrass. The vegetation on the Lodar soil is mainly bluebunch wheatgrass, black sagebrush, Nevada bluegrass, and antelope bitterbrush. Elevation is 5,600 to 6,400 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit makes up about 3 percent of the survey area. It is about 50 percent Xeric Torriorthents, 20 percent Rock outcrop, and 10 percent Lodar soils. The remaining 20 percent is soils of minor extent.

The Xeric Torriorthents are on hillsides. These soils are shallow or moderately deep and well drained. They formed in residuum and colluvium derived dominantly from shale. The surface layer is shaly loam, very shaly loam, or very shaly clay loam. Below this to a depth of 24 inches, the soils are shaly loam, very shaly clay loam, or very shaly silty clay. Unweathered shale is at a depth of 20 inches.

Rock outcrop consists of exposed shale and limestone bedrock, mainly on points and ridges.

Lodar soils are on hillsides. These soils are shallow and somewhat excessively drained. They formed in residuum and colluvium derived dominantly from limestone. The surface layer is grayish brown very cobbly loam. Below this the soils are brown and pale brown very stony loam. Unweathered limestone is at a depth of 15 inches.

Of minor extent in this unit are the Sheep Creek, Ant Flat, Donnardo, Lizzant, Orcky, Bezzant, Borvant, Manila, Rofiss, and Yeates Hollow soils.

This unit is used mainly as rangeland and for wildlife habitat and recreation.

This unit is poorly suited to most agricultural and urban uses because it has steep slopes, stones, shallow depth to bedrock, and Rock outcrop. Native vegetation should be protected from overgrazing. Range seeding is not practical because of the steep slopes, stones, shallow depth to bedrock, and Rock outcrop. Roads, paths, and trails are difficult to construct and maintain because steep slopes, shallow depth to bedrock, and Rock outcrop are limitations.

Wildlife in this area is varied. Mule deer live here throughout the year. Groves of birchleaf mountainmahogany are important for the mule deer during the winter.

DOMINANTLY WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, SLOPING TO VERY STEEP SOILS AND ROCK OUTCROP ON MOUNTAINSIDES AND HILLSIDES

This group consists of three map units. It makes up about 20 percent of this survey area. The native vegetation is mainly grasses, brush, oak, and aspen trees. Elevation is 5,600 to 10,500 feet. The average annual precipitation is 14 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 110 days.

The soils in this group are shallow to very deep and well drained and somewhat excessively drained. They formed in colluvium and residuum derived dominantly from limestone, quartzite, sandstone, and igneous rocks.

This group is used as rangeland and for wildlife habitat. Areas of this group are used for mining and for hunting deer, elk, game birds, and rabbits.

11. Wallsburg-Agassiz-Rock outcrop

Shallow, well drained and somewhat excessively drained, steep and very steep soils and Rock outcrop; on mountainsides

This map unit is in the Traverse Mountains, Tintic Mountains, and Canyon Mountains. It is mainly on the mountainsides. Slope is 25 to 70 percent. The vegetation on the Wallsburg and Agassiz soils is mainly bluebunch wheatgrass, muttongrass, antelope bitterbrush, and big sagebrush. Elevation is 5,800 to 8,500 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit makes up about 3 percent of the survey area. It is about 30 percent Wallsburg soils, 25 percent Agassiz soils, and 25 percent Rock outcrop. The remaining 20 percent is soils of minor extent.

Wallsburg soils are on mountainsides. These soils are shallow and well drained. They formed in colluvium and residuum derived dominantly from quartzite and igneous rocks. The surface layer is dark grayish brown very cobbly loam. The subsoil is pale brown very gravelly clay. Unweathered quartzite is at a depth of 19 inches.

Agassiz soils are on mountainsides. These soils are shallow and somewhat excessively drained. They formed in colluvium and residuum derived dominantly from limestone. The surface layer is brown very stony loam. Below this the soils are yellowish brown extremely stony loam. Unweathered limestone is at a depth of 19 inches.

Rock outcrop consists of exposed limestone, quartzite, and sandstone, mainly on ridges and points.

Of minor extent in the unit are Broadhead, Flygare, Manila, Parkay, and Yeates Hollow soils.

This unit is used mainly as rangeland and for wildlife habitat.

This unit is not suited to crops because it has shallow depth to bedrock, large stones, steep slopes, and exposed bedrock. It is poorly suited to range seeding because of the steep slopes and exposed bedrock.

This area provides habitat for mule deer from spring through fall and winter range for elk. Many songbirds, including bluebirds, finches, and sparrows, are in the area. Escarpments and ledges provide habitat for nesting and perching raptors, including golden eagle and peregrine falcon. Other important wildlife species include

coyote, fox, badger, bobcat, snowshoe hare, porcupine, magpies, and ravens.

12. Lundy-Hamtah-Rock outcrop

Shallow and very deep, well drained and somewhat excessively drained, steep and very steep soils and Rock outcrop; on mountainsides and hillsides

This map unit is in the Oquirrh Mountains, Nebo Mountains, and the San Pitch Mountains. It is mainly on mountainsides and hillsides. Slope is 30 to 70 percent. The vegetation on the Lundy soils is mainly bluebunch wheatgrass, Utah juniper, Indian ricegrass, and muttongrass. The vegetation on the Hamtah soil is mainly bluebunch wheatgrass, Gambel oak, bearded wheatgrass, and bigtooth maple. Elevation is 5,600 to 8,100 feet. The average annual precipitation is about 14 to 22 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 110 days.

This unit makes up about 8 percent of the survey area. It is about 40 percent Lundy and similar soils, 20 percent Hamtah and similar soils and 20 percent Rock outcrop. The remaining 20 percent is soils of minor extent.

Lundy soils are mainly on south-facing mountainsides and hillsides. These soils are shallow and somewhat excessively drained. They formed in colluvium and residuum derived dominantly from limestone and sandstone. The surface layer is dark brown very cobbly loam. Below this the soils are brown and pale brown very cobbly loam. Unweathered limestone is at a depth of 19 inches.

Hamtah soils are mainly on north-facing mountainsides. These soils are very deep and well drained. They formed in colluvium derived dominantly from sandstone, quartzite, shale, and limestone. The surface layer is very dark grayish brown loam and cobbly loam. The upper part of the subsoil is brown very cobbly clay loam, and the lower part is yellowish brown very gravelly clay or very cobbly clay to a depth of 60 inches or more.

Rock outcrop consists of exposed limestone, quartzite, or sandstone, mainly on ridges and points.

Of minor extent in the unit are the Agassiz, Amtoft, Bezzant, Borvant, Calpac, Deer Creek, Flygare, Lizzant, Lodar, Parkay, and Yeates Hollow soils.

This unit is used as rangeland and for wildlife habitat.

This unit is not suited to crops because it is shallow to bedrock, large stones, steep slopes, and exposed bedrock. It is poorly suited to range seeding because of the steep slopes and exposed bedrock.

This area provides habitat for mule deer from spring through fall and winter range for elk. Many songbirds, including bluebirds, finches, and sparrows, are in the unit. Escarpments and ledges provide habitat for nesting and perching raptors, including golden eagle and peregrine falcon. Other important wildlife species are coyote, fox, badger, bobcat, snowshoe hare, porcupine, magpies, and ravens.

13. Parkay-Flygare-Rock outcrop

Deep and very deep, well drained, sloping to very steep soils and Rock outcrop; on mountainsides

This map unit is in the Oquirrh Mountains, Nebo Mountains, and the San Pitch Mountains. Slope is 8 to 70 percent. The vegetation on the Parkay soil is mainly bluebunch wheatgrass, antelope bitterbrush, and Idaho fescue. The vegetation on the Flygare soil is mainly aspens, wildrye, and mountain brome. Elevation is 7,000 to 10,500 feet. The average annual precipitation is about 16 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

This unit makes up about 9 percent of the survey area. It is about 30 percent Parkay and similar soils, 25 percent Flygare and similar soils, and 25 percent Rock outcrop. The remaining 20 percent is soils of minor extent.

Flygare soils are on mountainsides. These soils are very deep and well drained. They formed in colluvium derived dominantly from limestone, quartzite, and sandstone. The surface layer is very dark grayish brown loam and light brownish gray very cobbly loam. The subsoil is pale brown very gravelly clay loam. Below this to a depth of 60 inches or more the soils are light yellowish brown extremely cobbly loam.

Parkay soils are on mountainsides. These soils are deep and well drained. They formed in colluvium and residuum derived dominantly from quartzite, sandstone, and limestone. The surface layer is dark brown very stony loam. The subsoil is yellowish brown very cobbly clay loam. Below this the soils are yellowish brown extremely gravelly clay loam. Unweathered limestone is at a depth of 47 inches.

The Rock outcrop consists of exposed limestone, quartzite, and sandstone bedrock, mainly on points and ridges.

Of minor extent in the unit are the Agassiz, Kitchell, Sheeprock, Starley, and Yeates Hollow soils.

This unit is used as rangeland and for wildlife habitat and recreation.

This unit is not suited to crops because it has steep slopes, large stones, and exposed bedrock. It is poorly suited to most agricultural and urban uses because of steep slopes, large stones, shallow depth to bedrock, and Rock outcrop. Native vegetation should be protected from overgrazing. Range seeding is not practical because of the large stones, steep slopes, and Rock outcrop. Roads, paths, and trails are difficult to construct and maintain because steep slopes and shallow depth to bedrock are limitations.

This high mountain habitat provides summer range for most of the big game species including elk and deer.

Blue and ruffed grouse, here through the year, feed on green forage and insects during summer months and aspen buds and catkins during winter months. Pocket gophers and ground squirrels are abundant here and provide food for coyote, fox, and bobcat. Many raptors nest in the conifers and feed in adjacent meadows. These include great horned owls, screech owls, goshawks, red-tailed hawks and sharp-skinned hawks. The summer bird population includes bluebird, chickadees, vireos, nuthatches, jays, hummingbirds, and ravens. Other wildlife species include mice, voles, chipmunks, porcupine, snowshoe hare, and occasional mountain lion.

broad land use considerations

The soils in the Fairfield-Nephi survey area vary widely in their potential for major land uses. About 5 percent of the survey area is used for irrigated crops of mainly alfalfa, wheat, barley, corn silage and a few small areas of apple, cherry, and peach orchards. This irrigated cropland is scattered throughout the survey area but is concentrated largely in general map units 3 and 7, which have high potential for irrigated crops. The main soil used as cropland in map unit 3 is Genola, and in map unit 7 the main cropped soil is Juab.

About 3 percent of the survey area is used for nonirrigated crops of mainly wheat and alfalfa. This nonirrigated cropland is scattered throughout the survey area but is concentrated largely in general map unit 7. A shortage of moisture is the most limiting factor for the production of nonirrigated crops. The Nephi soils are most suited to nonirrigated crops.

About 85 percent of the survey area is used as rangeland. Parts of all units in the survey area are grazed. General map units 9 through 13 are used mainly as summer range for cattle and sheep. They are limited mainly by a short growing season. Units 1 through 8 are used mainly as winter and spring range for cattle and sheep. They are limited mainly by a lack of moisture.

About 1 percent of the survey area is woodland. It is in general map unit 13, which is poorly suited to trees because it has steep slopes and shallow, stony soils.

About 1,500 acres in the survey area is classified as urban land. The level to sloping Genola and Juab soils in general soil map units 3 and 7 are well suited to urban uses. Soils on flood plains in unit 1 are poorly suited to urban development because of flooding. Soils on lake plains in unit 2 are poorly suited to urban uses because of the high shrink-swell potential. Soils on the alluvial fans and lake terraces in units 4, 5, and 8 are poorly suited because of areas where the soils are shallow to a hardpan. Unit 6 is poorly suited because of excessive sand. Units 9, 10, 11, 12, and 13 are poorly suited because the soils have steep slopes and shallow depth to bedrock. Sites that are suitable for houses or small commercial buildings, however, are generally available in these areas.

The use of these soils for recreation ranges from well suited to poorly suited, depending on the intensity of expected use and the properties of the soil. Map unit 1 is poorly suited to recreation because of flooding. Most of map units 2 through 13 are well suited to various types of recreational development. The hilly to very steep slopes in map units 9 through 13 limit the use of the soils for intensive recreational development, such as playgrounds and camp areas. All of these units, however, are suitable for such extensive recreational uses as hiking and horseback riding. Small areas suitable for intensive recreation may be available in map units that are generally poorly suited to recreational development.

Wildlife habitat generally grows well in the survey area. Soils in map units 2 through 10 are well suited to openland wildlife habitat, and soils in map units 11, 12, and 13 are well suited to woodland wildlife habitat. The soils on flood plains in map unit 1 are well suited to wetland wildlife habitat. The Roshe Springs soils are especially suitable for shallow water areas for waterfowl.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Genola silt loam, 1 to 2 percent slopes, is one of several phases in the Genola series.

Some map units are made up of two or more major soils. These map units are called soil complexes and soil associations.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Donnardo-Hiko Peak complex, 25 to 40 percent slopes, is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Flygare-Starley association, very steep, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 5 gives the acreage and proportionate extent of the soils for Juab, Utah, and Sanpete Counties. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

soil descriptions

AaF—Agassiz very stony loam, 30 to 70 percent slopes. This shallow, somewhat excessively drained soil is on mountainsides. The soil formed in residuum and colluvium derived dominantly from limestone. Slopes are short to long and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is brown very stony loam about 14 inches thick. The underlying material is yellowish brown extremely stony loam about 5 inches thick. Bedrock is at a depth of 19 inches. Depth to bedrock ranges from 10 to 20 inches.

Included in this unit are about 10 percent Lundy very cobbly loam, 30 to 70 percent slopes, on the lower part of south-facing slopes, and 5 percent Flygare gravelly loam, 30 to 70 percent slopes, and 5 percent Parkay very stony loam, 30 to 70 percent slopes, on north-

facing slopes. The percentage of included soils varies from one area to another.

Permeability of this Agassiz soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 7 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbush, muttongrass, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,100 pounds per acre.

Management practices needed to maintain or improve the potential plant community include proper grazing use and a planned grazing system.

This unit is poorly suited to range seeding. The main limitations are slope and depth to rock. Steepness of slope limits access by livestock and results in overgrazing of the less sloping areas. Mechanical treatment is not practical because the surface is stony and the slopes are steep.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, stoniness, and shallow depth to bedrock.

This map unit is in capability unit VIIs-M3, nonirrigated. The range site is Mountain Shallow Loam.

AbF—Agassiz-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are short to long and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 45 percent Agassiz very stony loam, 30 to 70 percent slopes, and 35 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Lundy very cobbly loam, 30 to 70 percent slopes, on the lower part of south-facing slopes and 5 percent Flygare gravelly loam, 30 to 70 percent slopes, and 5 percent Parkay very stony loam, 30 to 70 percent slopes, on north-facing slopes. The percentage of included soils varies from one area to another.

The Agassiz soil is shallow and somewhat excessively drained. It formed in residuum derived dominantly from limestone. Typically, the surface layer is brown very stony loam about 14 inches thick. The underlying material is yellowish brown extremely stony loam about 5 inches thick. Bedrock is at a depth of 19 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Agassiz soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 7 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Agassiz soil is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, muttongrass, and mountain big sagebrush. Practices needed to maintain or improve the potential plant community include proper grazing use and a planned grazing system. The normal expected yield of total air-dried herbage is about 1,100 pounds per acre.

This unit is poorly suited to range seeding. The main limitations are slope and depth to rock. Steepness of slope limits access by livestock in the higher lying areas and results in overgrazing in the less sloping areas. Mechanical treatment is not practical because the surface is stony and the slopes are steep.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, stoniness, shallow depth to bedrock, and Rock outcrop.

This map unit is in capability unit VIIs-M3, nonirrigated. The range site is Mountain Shallow Loam.

AcE—Amtoft-Rock outcrop complex, 8 to 30 percent slopes. This map unit is on hillsides and ridges. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 60 percent Amtoft stony loam, 8 to 30 percent slopes, and 20 percent Rock outcrop. The Rock outcrop is on points and ridges. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Saxby very cobbly loam, 10 to 30 percent slopes, and 5 percent Amtoft stony loam, 30 to 70 percent slopes, on hillsides, and 5 percent Hiko Peak stony sandy loam, 8 to 15 percent slopes, on alluvial fans. The percentage of included soils varies from one area to another.

The Amtoft soil is shallow and somewhat excessively drained. It formed in residuum and colluvium derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown stony loam about 5 inches thick. The underlying material is light gray very cobbly

loam about 14 inches thick. Bedrock is at a depth of 19 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Amtoft soil is moderately rapid. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 2 to 3 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 8 percent forbs, and 42 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, needleandthread, cliffrose, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 700 pounds per acre.

Practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Livestock grazing should be managed to protect the soil from excessive erosion. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. The unit is very poorly suited to range seeding. The main limitation is depth to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations are the areas of Rock outcrop, stoniness, and shallow depth to bedrock.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

AcF—Amtoft-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on hills and ridges. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 55 percent Amtoft stony loam, 30 to 70 percent slopes, and 25 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Saxby very cobbly loam, 30 to 70 percent slopes, and 5 percent Amtoft stony loam, 8 to 30 percent slopes, on hillsides, and 5 percent Hiko Peak stony sandy loam, 15 to 25 percent slopes, on alluvial fans. The percentage of included soils varies from one area to another.

The Amtoft soil is shallow and somewhat excessively drained. It formed in residuum and colluvium derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown stony loam about 5 inches thick. The underlying material is light gray very cobbly loam about 14 inches thick. Limestone is at a depth of 19 inches. Depth to limestone ranges from 10 to 20 inches.

Permeability of the Amtoft soil is moderately rapid. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 2 to 3 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of bedrock.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 8 percent forbs, and 42 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Indian ricegrass, and needleandthread. The normal expected yield of total air-dried herbage is about 700 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Slope limits access by livestock to higher lying areas and results in overgrazing of the less sloping areas. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Mechanical treatment is not practical because of stony surfaces and steep slopes.

This unit is very poorly suited to range seeding. The main limitations are slopes and depth to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations are Rock outcrop, steepness of slope, stoniness, and shallow depth to rock.

This map unit is in capability unit VIIs-53, nonirrigated. The range site is Semidesert Shallow Loam.

AdE—Amtoft, moist-Rock outcrop, 8 to 30 percent slopes. This map unit is on hills and ridges. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and juniper. Elevation is 5,000 to 6,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 55 percent Amtoft stony loam, moist, 8 to 30 percent slopes, and 25 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Amtoft stony loam, moist, 30 to 70 percent slopes; 5 percent Lodar very cobbly loam, 3 to 30 percent slopes; and 5 percent Saxby very cobbly loam, moist, 10 to 30 percent slopes, on hillsides. Also included are 5 percent Donnardo stony loam, 2 to 8 percent slopes, on alluvial fans. The

percentage of included soils varies from one area to another.

The Amtoft soil is shallow and somewhat excessively drained. It formed in residuum and colluvium derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown stony loam about 5 inches thick. The underlying material is light gray very cobbly loam about 14 inches thick. Bedrock is at a depth of 19 inches. Depth to bedrock ranges from 10 to 20 inches.

Rock outcrop consists of exposures of bedrock escarpments and bedrock on ridges.

Permeability of the Amtoft soil is moderately rapid. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 6 percent forbs, and 34 percent shrubs. Important plant species are bluebunch wheatgrass, Utah juniper, pinyon, needleandthread, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 1,450 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Livestock grazing should be managed to protect the unit from excessive erosion. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is very poorly suited to range seeding. The main limitations are the depth to rock, shallow soil, and content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. The main limitations are the areas of Rock outcrop, stoniness, and shallow depth to bedrock.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam (Juniper-Pinyon).

AdF—Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on hills and ridges. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and juniper. Elevation is 5,000 to 6,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 55 percent Amtoft stony loam, moist, 30 to 70 percent slopes, and 25 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Amtoft stony loam, moist, 8 to 30 percent slopes; 5 percent Lodar very cobbly loam, 30 to 70 percent slopes; and 5 percent Saxby very cobbly loam, moist, 30 to 70 percent slopes, on hillsides. The Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans also makes up 5 percent of the unit. The percentage of included soils varies from one area to another.

The Amtoft soil is shallow and somewhat excessively drained. It formed in residuum and colluvium derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown stony loam about 5 inches thick. The underlying material is light gray very cobbly loam about 14 inches thick. Bedrock is at a depth of 19 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Amtoft soil is moderately rapid. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren escarpments of bedrock.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 6 percent forbs, and 34 percent shrubs. Important plant species are bluebunch wheatgrass, Utah juniper, pinyon, needleandthread, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 1,450 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Slope limits access by livestock to higher lying areas and results in overgrazing of the less sloping areas. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Mechanical treatment is not practical because the surface is stony and the slopes are steep.

This unit is poorly suited to range seeding. The limitations are slope, depth to rock, and rock fragments.

This unit is poorly suited to recreational and homesite development. The main limitations are Rock outcrop, steepness of slope, stoniness, and shallow depth to bedrock.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam (Juniper-Pinyon).

AeD—Ant Flat loam, 8 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from sandstone, limestone, and shale. Slopes are short to medium in length and are concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,500 to 7,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41

to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown loam about 10 inches thick. The subsoil is brown clay about 38 inches thick. The substratum is pinkish gray silty clay to a depth of 60 inches or more.

Included in this unit are about 10 percent Sheep Creek very cobbly loam, 10 to 30 percent slopes, on hillsides, and 5 percent Yeates Hollow stony loam, 6 to 10 percent slopes, on alluvial fans. The percentage of included soils varies from one area to another.

Permeability of the Ant Flat soil is slow. Available water capacity is about 9 to 11 inches. Water supplying capacity is 12 to 16 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 80 percent perennial grasses, 10 percent forbs, and 10 percent shrubs. Important plant species are bluebunch wheatgrass, basin wildrye, bearded wheatgrass, and muttongrass. The normal expected total yield of air-dried herbage is about 1,850 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include intermediate wheatgrass, slender wheatgrass, balsamroot, sweetvetch, peavine, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreational development, the main limitations are slow permeability and slope. Cuts and fills should be seeded or mulched. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover.

This unit is poorly suited to homesite development. The main limitations are shrink-swell potential and low strength of the soil.

This map unit is in capability unit VIe-M, nonirrigated. The range site is Mountain Loam.

AF—Aquic Ustifluvents, saline. This map unit consists of very deep, moderately well drained to poorly drained soils on flood plains. Individual areas of these soils are in oxbow loops and channels. These soils formed in mixed alluvium. Slopes are 0 to 2 percent and are convex or concave. The native vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,900 to 5,000 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

The soils in this unit are highly stratified fine sand to silty clay. They are moderately affected to very strongly affected by salt and alkali.

Included in this unit are about 10 percent Mellor silt loam, wet, 0 to 2 percent slopes, in the higher lying areas, and 5 percent Roshe Springs silt loam in the lower lying areas. The percentage of included soils varies from one area to another.

Permeability of these soils is moderate to slow. Runoff is slow, or the soils are ponded. A water table fluctuates from above the surface to a depth of about 48 inches. The water level depends on the level of the Sevier River.

This unit is used as rangeland and for wildlife habitat. In most areas vegetation is saltgrass, alkali sacaton, and shadscale. The suitability of this unit for seeding rangeland is poor. The main limitations are the content of salt and alkali and the high water table.

The unit is moderately suited to livestock grazing. The main limitations are the hazard of flooding, the high water table, and the content of salt and alkali in the soil.

This map unit is in capability subclass Vw, nonirrigated.

AG—Argic Pachic Cryoborolls, rolling. This map unit consists of very deep soils used for mountain meadows. These soils formed in alluvium, colluvium, and residuum derived dominantly from limestone, shale, sandstone, and volcanic rocks. Slopes are 2 to 8 percent and are convex or concave. In most areas the present vegetation is mainly meadow grasses. Elevation is 7,500 to 9,000 feet. The average annual precipitation is 20 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

These soils are variable, but commonly the surface layer is dark brown or very dark brown loam to gravelly loam about 15 inches thick. The subsoil is dark brown to dark reddish brown and ranges from gravelly loam to clay. It is about 32 inches thick. The substratum is brown clay to extremely cobbly loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Pachic Argixerolls on lower lying, south-facing slopes, and 10 percent Flygare loam, on higher lying, north-facing slopes. Also included is 4 percent Aquic Cryoborolls in drainageways and depressional areas. The percentage of included soils varies from one area to another.

Permeability of these soils is moderate to moderately slow. Available water capacity is about 5 to 11 inches. Water supplying capacity is 10 to 22 inches. Effective rooting depth is 60 inches or more.

This unit is used as rangeland and for wildlife habitat and recreation. In most areas the present vegetation is mainly grasses and low forbs and a few, scattered clumps of oak, maple, and aspen. Range can be seeded if it is in poor condition. Grazing should be delayed until

the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

The main recreational uses of this unit are hunting, hiking, and camping. Vehicles should be used during periods when the soil is dry and firm.

Not placed into interpretative groups (all in National Forest).

AhA—Ashdown loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from shale, limestone, and conglomerate. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,200 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is strong brown loam about 8 inches thick. The underlying material is yellowish red loam, silt loam, or silty clay loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Ashdown loam, 2 to 4 percent slopes, on alluvial fans; 5 percent Genola silt loam, 1 to 2 percent slopes, on the lower part of alluvial fans; and 5 percent Hiko Peak stony sandy loam, 4 to 8 percent slopes, on the higher part of alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Ashdown soil is moderately slow. Available water capacity is about 8 to 10 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are wheat, alfalfa, barley, and corn used for silage.

The potential plant community on this unit is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Wyoming big sagebrush, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 850 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing.

This unit is well suited to range seeding. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Sprinkler irrigation is the better method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Cuts and fills should be seeded or mulched. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

AhB—Ashdown loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from shale, limestone, and conglomerate. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,200 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is strong brown loam about 8 inches thick. The underlying material is yellowish red loam, silt loam, or silty clay loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Ashdown loam, 0 to 2 percent slopes, on alluvial fans; 5 percent Genola silt loam, 2 to 5 percent slopes, on the lower part of alluvial fans; and 5 percent Hiko Peak stony sandy loam, 4 to 8 percent slopes, on the higher part of alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Ashdown soil is moderately slow. Available water capacity is about 8 to 10 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are wheat, alfalfa, barley, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Wyoming big sagebrush, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 850 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush

management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational and homesite development. Cuts and fills should be seeded or mulched. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

AkA—Ashdown loam, moist, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from shale, limestone, and conglomerate. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,450 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is strong brown loam about 8 inches thick. The underlying material is yellowish red loam, silt loam, or silty clay loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Ashdown loam, moist, 2 to 4 percent slopes, on alluvial fans; 5 percent Hansel silt loam, 0 to 2 percent slopes, on the lower part of alluvial fans; and 5 percent Donnardo stony loam, 2 to 8 percent slopes, on the higher part of alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Ashdown soil is moderately slow. Available water capacity is about 8 to 10 inches. Water supplying capacity is 9 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, pasture, nonirrigated winter wheat, and irrigated crops. The main irrigated crops are wheat, alfalfa, barley, and corn used for silage.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can be used to improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Russian wildrye, intermediate wheatgrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to adapted crops. If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. If irrigated crops are grown, sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Cuts and fills should be seeded or mulched. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

AkB—Ashdown loam, moist, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from shale, limestone, and conglomerate. Slopes are long and convex or concave in shape. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,450 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is strong brown loam about 8 inches thick. The underlying material is yellowish red loam, silt loam, or silty clay loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Ashdown loam, moist, 0 to 2 percent slopes, on alluvial fans; 5 percent Hansel silt loam, 2 to 4 percent slopes, on the lower part of alluvial fans; and 5 percent Donnardo stony loam, 2 to 8 percent slopes, on the higher part of alluvial

fans. The percentage of included soils varies from one area to another.

Permeability of this Ashdown soil is moderately slow. Available water capacity is about 8 to 10 inches. Water supplying capacity is 9 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, pasture, nonirrigated winter wheat, and irrigated crops. The main irrigated crops are wheat, alfalfa, barley, and corn used for silage.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Russian wildrye, intermediate wheatgrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to adapted crops. If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. If irrigated crops are grown, sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Cuts and fills should be seeded or mulched. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

AmE—Atepic shaly loam, 10 to 40 percent slopes. This shallow, well drained soil is on foothills. The soil formed in residuum derived dominantly from shale. Slopes are short and convex. In most areas the present vegetation is mainly junipers, shrubs, and grasses. Elevation is 5,400 to 5,900 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown shaly loam about 6 inches thick. The underlying material is light brownish gray shaly silty clay loam about 9 inches thick. Soft shale is at a depth of 15 inches. Depth to shale ranges from 10 to 20 inches.

Included in this unit are about 5 percent Lizzant very cobbly loam, dry, 30 to 60 percent slopes, on alluvial fans, and 5 percent Sumine very cobbly loam, 10 to 30 percent slopes, and 5 percent Amtoft stony loam, moist, 8 to 30 percent slopes, on hillsides. The percentage of included soils varies from one area to another.

Permeability of this Atepic soil is slow. Available water capacity is about 2 to 3 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 0.5 to 1.0 percent. Runoff is rapid, and the hazard of water erosion is high.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 20 percent perennial grasses, 5 percent forbs, and 75 percent shrubs. Important plant species are birchleaf mountainmahogany, Utah juniper, bluebunch wheatgrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 1,250 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Livestock grazing should be managed to protect the unit from excessive erosion. Brush management by prescribed burning or chemical or mechanical treatment is not practical because of the shallow depth to shale and steepness of slope.

This unit is very poorly suited to range seeding.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slow permeability and shallow depth to shale.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Shale (Juniper-Pinyon).

BA—Beaches. This miscellaneous area unit consists of very deep, poorly drained to very poorly drained soil material on low terraces. Slopes are 2 to 15 percent and are convex or concave. Vegetation is sparse stands of water-tolerant forbs. Elevation is 4,480 to 5,000 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is derived from mixed lake sediment that ranges from sand to clay. The sediment is gravelly, cobbly, or stony in some areas. It is strongly alkaline to very strongly alkaline, strongly calcareous to very strongly calcareous, and moderately saline to strongly saline.

Included in this unit are about 10 percent Roshe Springs silt loam in depressional areas; 6 percent

Medburn fine sandy loam, 0 to 2 percent slopes; and 4 percent Linoyer very fine sandy loam, 1 to 2 percent slopes, on the upper part of side slopes. The percentage of the included soils varies from one area to another.

Permeability is very slow to rapid. A water table generally is near the surface, but its level fluctuates with the level of the lake.

This unit is used as rangeland and for recreation and wildlife habitat.

This unit has limited potential for livestock grazing because of the high water table and the quality of vegetative cover.

The sandy areas of this unit are suited to picnicking and camping.

This map unit is in capability class VIII.

Bb—Benjamin silty clay loam. This very deep, somewhat poorly drained soil is on flood plains. It formed in alluvium derived dominantly from mixed sedimentary rocks. Slopes are 0 to 2 percent and are long and concave. The native vegetation is mainly grasses. Elevation is 4,600 to 5,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown silty clay loam about 8 inches thick. Below this to a depth of 60 inches or more is grayish brown and pale brown clay.

Included in this unit are about 10 percent Benjamin silty clay loam, which is moderately saline-alkaline and intermixed; 5 percent Kirkham silt loam, in the higher lying areas; and 5 percent Roshe Springs silt loam, in the lower lying areas. The percentage of the included soils varies from one area to another.

Permeability of this Benjamin soil is slow. Available water capacity is about 10 to 11 inches. Effective rooting depth is mainly above the water table at 30 to 60 inches. The water table is highest between June and July. The organic matter content of the surface layer is 1 to 3 percent. Runoff is slow, or the soil is ponded. The hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The irrigated crops are mainly wheat, alfalfa hay, barley, and corn used for silage.

The potential plant community on this soil is about 80 percent perennial grasses, 12 percent forbs, and 8 percent shrubs. Important plant species are sedges, western wheatgrass, basin wildrye, and tufted hairgrass. The normal expected yield of total air-dried herbage is about 2,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sedges may develop as a result of continuous overgrazing.

This unit is suited to range seeding. The main limitation is the fluctuating high water table. Plants suitable for seeding include sweetvetch, alfalfa, intermediate wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is moderately suited to irrigated crops. The main limitations are the high water table and slow permeability. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is poorly suited to recreational uses and homesite development. The main limitations are the high water table, shrink-swell potential, and slow permeability.

This map unit is in capability units IIIw-22, irrigated, and IVw-22, nonirrigated. The range site is Semiwet Meadows.

Bc—Benjamin silty clay loam, moderately saline-alkali. This very deep, somewhat poorly drained soil is on flood plains. It formed in alluvium derived dominantly from mixed sedimentary rocks. Slopes are 0 to 2 percent and are long and concave. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,600 to 5,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown silty clay loam about 12 inches thick. Below this to a depth of 60 inches or more is grayish brown and pale brown silty clay. The soil is moderately affected by salt and is moderately alkaline.

Included in this unit are about 10 percent Benjamin silty clay loam that is intermixed; 5 percent Kirkham silty loam, in the higher lying areas; and 5 percent Roshe Springs silt loam, in the lower lying areas. The percentage of included soils varies from one area to another.

Permeability of this Benjamin soil is slow. Available water capacity is about 6 to 8 inches. Effective rooting depth is mainly above the water table at 30 to 60 inches. The water table is highest between June and July. The organic matter content of the surface layer is 1 to 3 percent. Runoff is slow, or the soil is ponded. The hazard of water erosion is slight. The soil is subject to rare flooding.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 88 percent perennial grasses, 2 percent forbs, and 10 percent shrubs. Important plant species are inland saltgrass, alkali sacaton, alkali bluegrass, sedges, and black greasewood. The normal expected yield of total air-dried herbage is about 1,750 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of inland saltgrass may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation is the content of salt and alkali.

This soil is poorly suited to recreational use and homesite development. The main limitations are the content of salt and alkali, the high water table, shrink-swell potential, and the slow permeability.

This map unit is in capability unit VIIw-U8, nonirrigated. The range site is Alkali Bottom.

BdD—Bezzant gravelly loam, 6 to 30 percent slopes. This very deep, well drained soil is on mountainsides and hillsides. It formed in alluvium and colluvium derived dominantly from mixed sedimentary rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown gravelly loam about 13 inches thick. Below this to a depth of 60 inches or more is light gray very gravelly loam and very stony loam.

Included in this unit are about 5 percent Bezzant gravelly loam, 30 to 60 percent slopes; 5 percent Lizzant very cobbly loam, 8 to 30 percent slopes; and 5 percent Lundy very cobbly loam, 30 to 70 percent slopes, on hillsides. About 5 percent of the map unit is Deer Creek cobbly loam, 6 to 25 percent slopes, which is on alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Bezzant soil is moderate. Available water capacity is about 5 to 7 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Idaho fescue, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is poorly suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, bitterbrush, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations of the soil are steepness of slope and stoniness.

This map unit is in capability unit VIs-M4, nonirrigated. The range site is Mountain Stony Loam.

BdF—Bezzant gravelly loam, 30 to 60 percent slopes. This very deep, well drained soil is on mountainsides and hillsides. It formed in alluvium and colluvium derived dominantly from mixed sedimentary rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown gravelly loam about 13 inches thick. Below this to a depth of 60 inches or more is light gray very gravelly loam and very stony loam.

Included in this unit are about 5 percent Bezzant gravelly loam, 6 to 30 percent slopes; 5 percent Lizzant very cobbly loam, 30 to 60 percent slopes; and 5 percent Lundy very cobbly loam, 30 to 60 percent slopes, on hillsides. About 5 percent of this map unit is Deer Creek cobbly loam, 6 to 25 percent slopes, which is on alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Bezzant soil is moderate. Available water capacity is about 5 to 7 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this unit is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Idaho fescue, and big sagebrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas. Dense stands of big sagebrush may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations of this soil are steepness of slope and stoniness.

This map unit is in capability unit VIIs-M4, nonirrigated. The range site is Mountain Stony Loam.

BeD—Bezzant gravelly loam, dry, 6 to 30 percent slopes. This very deep, well drained soil is on hillsides. It formed in alluvium and colluvium derived dominantly from mixed sedimentary rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,600 to 6,400 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown gravelly loam about 13 inches thick. Below this to a depth of 60 inches or more is light gray very gravelly loam and very stony loam.

Included in this unit are about 5 percent Bezzant gravelly loam, dry, 30 to 60 percent slopes; 5 percent Lizzant very cobbly loam, dry, 30 to 60 percent slopes; and 5 percent Lodar very cobbly loam, 3 to 30 percent slopes, on hillsides. About 5 percent of the unit is Borvant cobbly loam, 8 to 25 percent slopes, which is on alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Bezzant soil is moderate. Available water capacity is about 5 to 7 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 975 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a greater hazard of erosion.

This unit is poorly suited to range seeding. The main limitations of the soil are slope and the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, antelope bitterbrush, slender wheatgrass, peavine, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are steepness of slope and stoniness.

This map unit is in capability unit VIs-U4, nonirrigated. The range site is Upland Stony Loam.

BeF—Bezzant gravelly loam, dry, 30 to 60 percent slopes. This very deep, well drained soil is on hillsides. It formed in alluvium and colluvium derived dominantly from mixed sedimentary rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,600 to 6,400 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown gravelly loam about 13 inches thick. Below this to a depth of 60 inches or more is light gray very gravelly loam and very stony loam.

Included in this unit are about 5 percent Bezzant gravelly loam, dry, 6 to 30 percent slopes; 5 percent Lizzant very cobbly loam, dry, 30 to 60 percent slopes; and 5 percent Lodar very cobbly loam, 30 to 70 percent slopes, on hillsides. About 5 percent of this map unit is Borvant cobbly loam, 8 to 25 percent slopes, which is on alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Bezzant soil is moderate. Available water capacity is about 5 to 7 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, big sagebrush, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 975 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas. Dense stands of antelope bitterbrush may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation for seeding is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations of this soil are steepness of slope and stoniness.

This map unit is in capability unit VIIs-U4, nonirrigated. The range site is Upland Stony Loam.

Bf—Birdow loam. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are 0 to 2 percent and are long and concave. The native

vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, this soil is mainly brown loam that extends to a depth of 60 inches or more.

Included in this unit are about 5 percent Donnardo stony loam, 2 to 8 percent slopes, in higher lying areas; 5 percent Juab loam, 0 to 2 percent slopes, in just slightly higher areas; 5 percent Keigley silt loam, dry, 0 to 2 percent slopes, in the lower lying areas; and 5 percent Wales loam, 2 to 4 percent slopes, on the younger alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Birdow soil is moderate. Available water capacity is about 8 to 11 inches. Water supplying capacity is 8 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated and nonirrigated crops. The main irrigated crops are alfalfa, barley, wheat, and corn used for silage. The main nonirrigated crops are wheat and alfalfa.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,475 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, bitterbrush, balsamroot, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If limitations are overcome, this unit is well suited to recreational uses and homesite development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIc-2, irrigated, and IVc-U, nonirrigated. The range site is Upland Loam.

BgC—Borvant cobbly loam, 2 to 8 percent slopes. This shallow, somewhat excessively drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone and sandstone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,700 to 7,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is dark grayish brown and grayish brown cobbly loam about 9 inches thick. The underlying material is very strongly calcareous, pale brown very gravelly loam about 10 inches thick. A carbonate cemented hardpan, 7 inches thick, is at a depth of 19 inches. Depth to hardpan ranges from 10 to 20 inches. Stratified layers of very gravelly loam and indurated hardpan are below the hardpan and extend to a depth of 60 inches or more.

Included in this unit are about 5 percent Borvant cobbly loam, 8 to 25 percent slopes; 5 percent Donnardo stony loam, 2 to 8 percent slopes; and 5 percent Jericho gravelly fine sandy loam, 4 to 15 percent slopes, on alluvial fans. Spager gravelly loam, 4 to 15 percent slopes, makes up 5 percent of the unit and is on south-facing alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Borvant soil is moderate. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly as rangeland and for wildlife habitat. In a few areas juniper trees are grown for fence posts (fig. 5).

The potential plant community on this soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Indian ricegrass, Utah juniper, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,250 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical or mechanical treatment is not practical because the soil is shallow to a hardpan. Dense stands of Utah juniper may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation is depth to the hardpan.

If this unit is used for recreation or homesite development, the main limitations of the soil are stoniness and shallow depth to the hardpan.

This map unit is in capability unit VIIs-U3J, nonirrigated. The range site is Upland Shallow Loam (Juniper-Pinyon).

BgD—Borvant cobbly loam, 8 to 25 percent slopes. This shallow, somewhat excessively drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone and sandstone. Slopes are long and convex. In most areas the present vegetation is mainly grasses, junipers, and shrubs. Elevation is 4,700 to 7,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is dark grayish brown and grayish brown cobbly loam about 9 inches thick. The underlying material is very strongly calcareous, pale brown very gravelly loam about 10 inches thick. A carbonate cemented hardpan, 7 inches thick, is at a depth of 19 inches. Depth to hardpan ranges from 10 to 20 inches. Stratified layers of very gravelly loam and indurated hardpan are below the cemented hardpan and extend to a depth of 60 inches or more.

Included in this unit are about 5 percent Borvant cobbly loam, 2 to 8 percent slopes; 5 percent Borvant cobbly loam, 25 to 60 percent slopes; and 5 percent Donnardo stony loam, 2 to 8 percent slopes, on alluvial fans. Spager gravelly loam, 4 to 15 percent slopes, makes up about 5 percent of the map unit and is on



Figure 5.—Juniper trees and big sagebrush on Borvant cobbly loam, 2 to 8 percent slopes.

south-facing alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Borvant soil is moderate. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly as rangeland and for wildlife habitat. In a few areas juniper trees are grown for fence posts.

The potential plant community on these soils is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Indian ricegrass, Utah juniper, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,250 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation is depth to the hardpan.

If this unit is used for recreation or homesite development, the main limitations of the soil are stones and shallow depth to the hardpan.

This map unit is in capability unit VIIs-U3J, nonirrigated. The range site is Upland Shallow Loam (Juniper-Pinyon).

BhD—Borvant-Reywat complex, 8 to 30 percent slopes. This map unit is on hillsides and alluvial fans. Slopes are medium and convex. In most areas the present vegetation is mainly grasses, junipers, and shrubs. Elevation is 5,000 to 6,400 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 45 percent Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans, and about 35 percent Reywat very stony loam, 10 to 30 percent slopes, on hillsides. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Deer Creek cobbly loam, 6 to 25 percent slopes, on alluvial fans, and 5 percent Sumine very cobbly loam, 10 to 30 percent slopes, on hillsides. Five percent of the map unit is Rock outcrop. The percentage of included soils varies from one area to another.

The Borvant soil is shallow and somewhat excessively drained. It formed in alluvium derived dominantly from limestone and sandstone. Typically, the surface layer is dark grayish brown and grayish brown cobbly loam about 9 inches thick. The underlying material is very strongly calcareous, pale brown very gravelly loam about 10 inches thick. A lime cemented hardpan, 7 inches thick, is at a depth of 19 inches. Depth to hardpan ranges from 10 to 20 inches. Stratified layers of very gravelly loam and indurated hardpan are below the cemented hardpan. They extend to a depth of 60 inches or more.

Permeability of the Borvant soil is moderate. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Reywat soil is shallow and well drained. It formed in residuum derived dominantly from igneous rocks. Typically, the surface layer is brown very stony loam about 5 inches thick. The upper 4 inches of the subsoil is brown cobbly clay loam. The lower 8 inches is light yellowish brown very cobbly clay loam. Bedrock is at a depth of 17 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Reywat soil is moderately slow. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 2 to 4.5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Borvant soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Indian ricegrass, Utah juniper, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,250 pounds per acre.

The potential plant community on the Reywat soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, Sandberg bluegrass, black sagebrush, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment is not practical on this soil because of its shallow depth to bedrock.

This unit is very poorly suited to range seeding. The main limitation is depth to rock.

If this unit is used for recreation or homesite development, the main limitations are steepness of slope, shallow depth to bedrock, and stoniness.

This map unit is in capability unit VIIs-U3J, nonirrigated. The Borvant soil is in Upland Shallow Loam (Juniper-Pinyon) range site, and the Reywat soil is in Upland Shallow Loam range site.

BhF—Borvant-Reywat complex, 30 to 60 percent slopes, This map unit is on hillsides and alluvial fans. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses, juniper trees, and shrubs. Elevation is 5,000 to 6,400 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 45 percent Borvant cobbly loam, 30 to 60 percent slopes, on alluvial fans, and about 35 percent Reywat very stony loam, 30 to 60 percent slopes, on hillsides. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Deer Creek cobbly loam, 6 to 25 percent slopes, on alluvial fans, and 5 percent Sumine very cobbly loam, 30 to 60 percent slopes, on hillsides. Five percent of the unit is Rock outcrop. The percentage of these included soils varies from one area to another.

The Borvant soil is shallow and somewhat excessively drained. It formed in alluvium derived dominantly from limestone and sandstone. Typically, the surface layer is dark grayish brown and grayish brown cobbly loam about 9 inches thick. The underlying material is very strongly calcareous, pale brown very gravelly loam about 10 inches thick. A lime cemented hardpan, 7 inches thick, is at a depth of 19 inches. Depth to hardpan ranges from 10 to 20 inches. Stratified layers of very gravelly loam and indurated hardpan are below the cemented pan. They extend to a depth of 60 inches or more.

Permeability of the Borvant soil is moderate. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Reywat soil is shallow and well drained. It formed in residuum derived dominantly from igneous rocks. Typically, the surface layer is brown very stony loam about 5 inches thick. The upper 4 inches of the subsoil is brown cobbly clay loam. The lower 8 inches is light yellowish brown very cobbly clay. Bedrock is at a depth of 17 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Reywat soil is moderately slow. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 2.0 to 4.5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Borvant soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Indian ricegrass, Utah juniper, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,250 pounds per acre.

The potential plant community on the Reywat soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, Sandberg bluegrass, black sagebrush, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment is not practical because of the shallow depth of the soils and steep slopes.

This unit is poorly suited to range seeding. The main limitations of the soil are depth to rock and slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, shallow depth to bedrock in the Reywat soil, and stoniness.

This map unit is in capability unit VIIs-U3J, nonirrigated. The Borvant soil is in Upland Shallow Loam (Juniper-Pinyon) range site, and the Reywat soil is in Upland Shallow Loam range site.

BkE—Borvant-Sandall complex, 8 to 60 percent slopes. This map unit is on alluvial fans and hillsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses, junipers, and shrubs. Elevation is 5,000 to 6,400 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 50 percent Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans, and 30 percent Sandall very cobbly loam, 25 to 60 percent slope, on hillsides. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Borvant cobbly loam, 2 to 8 percent slopes, and 5 percent Donnardo stony loam, 2 to 8 percent slopes, on alluvial fans. Five percent of the map unit is Rock outcrop, and 5 percent is areas of Sandall soils which are on hillsides and which have slope of less than 25 percent. The percentage of the included soils varies from one area to another.

The Borvant soil is shallow and somewhat excessively drained. It formed in alluvium derived dominantly from limestone and sandstone. Typically, the surface layer is dark grayish brown and grayish brown cobbly loam about 9 inches thick. The underlying material is very strongly calcareous, pale brown very gravelly loam about 10 inches thick. A lime cemented hardpan, 7 inches thick, is at a depth of 19 inches. Depth to hardpan ranges from

10 to 20 inches. Stratified layers of very gravelly loam and indurated hardpan are below the cemented pan. They extend to a depth of 60 inches.

Permeability of the Borvant soil is moderate. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Sandall soil is moderately deep and well drained. It formed in colluvium and residuum derived dominantly from limestone and conglomerate. Typically, the surface layer is pale brown very cobbly loam about 5 inches thick. The subsoil is very pale brown very cobbly loam about 10 inches thick. The substratum is very strongly calcareous, white very cobbly loam about 17 inches thick. Conglomerate is at a depth of 32 inches. Depth to conglomerate ranges from 20 to 40 inches.

Permeability of the Sandall soil is moderate. Available water capacity is about 2.5 to 3.5 inches. Water supplying capacity is 4.5 to 6.5 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Borvant soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Indian ricegrass, Utah juniper, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,250 pounds per acre.

The potential plant community on the Sandall soil is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are Utah juniper, bluebunch wheatgrass, Wyoming big sagebrush, Nevada bluegrass, and needleandthread. The normal expected yield of total air-dried herbage is about 1,200 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment is not practical because of the shallow depth of the Borvant soil and the steepness of slopes.

This unit is very poorly suited to range seeding. The main limitation is depth to the hardpan.

If this unit is used for recreation or homesite development, the main limitations are steepness of slope, shallow depth to a cemented pan, and stoniness.

This map unit is in capability unit VIIs-U3J, nonirrigated. The Borvant soil is in Upland Shallow Loam (Juniper-Pinyon) range site, and the Sandall soil is in Upland Stony Loam (Juniper) range site.

Bm—Bramwell silt loam. This very deep, somewhat poorly drained soil is on low lake terraces and lake plains. The soil formed in lake sediment derived dominantly from sandstone, limestone, and conglomerate. Slopes are 0 to 1 percent and are long and concave. The native vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,500 to 4,900 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 7 inches thick. Below this to a depth of 60 inches or more is very strongly alkaline light brownish gray and light gray silty clay loam. This soil is moderately affected by salt.

Included in this unit are about 5 percent Harding silt loam, on lake terraces; 5 percent Benjamin silty clay loam, which is moderately saline-alkaline and is on flood plains; and 5 percent Saltair silt loam and 5 percent Woodrow silt loam, 0 to 1 percent slopes, on lake plains. The percentage of the included soils varies from one area to another.

Permeability of this Bramwell soil is slow. Available water capacity is about 7 to 10 inches. Effective rooting depth is limited by a seasonal high water table that is at a depth of 2.5 to 5 feet throughout the year. The organic matter content of the surface layer is 2 to 5 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and irrigated hay and pasture.

The potential plant community on this soil is about 88 percent perennial grasses, 2 percent forbs, and 10 percent shrubs. Important plant species are inland saltgrass, alkali sacaton, alkali bluegrass, sedges, and black greasewood. The normal expected yield of total air-dried herbage is about 1,750 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of inland saltgrass may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation is the moderate salinity in the soil.

The concentration of salt and alkali in the surface layer limits the production of plants that are suitable for hay and pasture. Drainage and management of irrigation water reduce the concentration of salt; however, leaching the salt from the surface layer is limited by the high water table. Salt-tolerant species are most suitable for planting.

This unit is poorly suited to recreational uses and homesite development. The main limitations are moderate salinity, very strong alkalinity, and the seasonal high water table.

This map unit is in capability units IVw-28, irrigated, and VIIw-28, nonirrigated. The range site is Alkali Bottom.

BnD—Broadhead loam, 3 to 25 percent slopes. This very deep, well drained soil is on alluvial fans and mountainsides. It formed in alluvium and colluvium derived from igneous rocks. Slopes are medium and concave. The native vegetation is mainly grasses and shrubs. Elevation is 5,800 to 7,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown loam about 6 inches thick. The subsoil is mainly brown clay about 37 inches thick. The substratum is pale brown clay to a depth of 60 inches or more.

Included in this unit are about 5 percent Deer Creek cobbly loam, 6 to 25 percent slopes, and 5 percent Yeates Hollow stony loam, 10 to 25 percent slopes, on alluvial fans. Five percent of this map unit is Wallsburg very cobbly loam, 25 to 70 percent slopes, which is on hillsides. The percentage of included soils varies from one area to another.

Permeability of this Broadhead soil is slow. Available water capacity is about 8 to 10 inches. Water supplying capacity is 12 to 14 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 80 percent perennial grasses, 10 percent forbs, and 10 percent shrubs. Important plant species are bluebunch wheatgrass, basin wildrye, bearded wheatgrass, and muttongrass. The normal expected yield of total air-dried herbage is about 1,600 pounds per acre.

Dense stands of sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can be used to improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include intermediate wheatgrass, slender wheatgrass, balsamroot, sweetvetch, peavine, and species of the potential plant community for which seed or stock is available.

If this unit is used for nonirrigated small grains, the main limitations of the soil are droughtiness and a short growing season during some years. A one-year fallow rotation is most suitable.

If this unit is used for recreation or homesite development, the main limitations are slope and shrink-swell potential.

This map unit is in capability unit IVe-M5. The range site is Mountain Loam.

BnF—Broadhead loam, 25 to 70 percent slopes. This very deep, well drained soil is on alluvial fans and mountainsides. It formed in alluvium and colluvium derived dominantly from igneous rocks. Slopes are medium and are concave. The native vegetation is mainly grasses and shrubs. Elevation is 5,800 to 7,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown loam about 6 inches thick. The subsoil is mainly brown clay about 37 inches thick. The substratum is pale brown clay to a depth of 60 inches or more.

Included in this unit are about 5 percent Deer Creek cobbly loam, 6 to 25 percent slopes, and 5 percent Yeates Hollow very stony loam, 10 to 25 percent slopes, on alluvial fans. Five percent of this map unit is Wallsburg very cobbly loam, 25 to 70 percent slopes, which is on hillsides. The percentage of included soils varies from one area to another.

Permeability of this Broadhead soil is slow. Available water capacity is about 8 to 10 inches. Water supplying capacity is 12 to 14 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 80 percent perennial grasses, 10 percent forbs, and 10 percent shrubs. Important plant species are bluebunch wheatgrass, basin wildrye, bearded wheatgrass, and muttongrass. The normal expected yield of total air-dried herbage is about 1,600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing.

This unit is poorly suited to range seeding. Slope limits access by livestock and results in overgrazing of the less sloping areas.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope and shrink-swell potential.

This map unit is in capability unit VIIe-M5, nonirrigated. The range site is Mountain Loam.

CaB—Calita loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone and sandstone. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,500 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 7 inches thick. Below this to a depth of 60 inches or more is pale brown and light yellowish brown loam.

Included in this unit are about 5 percent Doyce loam, 2 to 4 percent slopes, and 5 percent Calita loam, 4 to 8 percent slopes, on alluvial fans. Five percent of this map unit is Borvant cobbly loam, 2 to 8 percent slopes, on the higher parts of alluvial fans, and 5 percent is Juab loam, 2 to 4 percent slopes, on the lower parts of alluvial fans. The percentage of included soils varies from one area to another.

Permeability of the Calita soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and crops. The main nonirrigated crop is small grains, and the main irrigated crops are alfalfa, barley, wheat, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,475 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this soil, a two-year fallow rotation is most suitable. The soil is well suited to irrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawn, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

CaC—Calita loam, 4 to 8 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone and sandstone. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,500 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 7 inches thick. Below this to a depth of 60 inches or more is pale brown and light yellowish loam.

Included in this unit are about 5 percent Doyce loam, 4 to 8 percent slopes, and 5 percent Calita loam, 2 to 4 percent slopes, on alluvial fans. Five percent of this map unit is Borvant cobbly loam, 2 to 8 percent slopes, which is on higher parts of alluvial fans, and 5 percent is Juab loam, 4 to 8 percent slopes, on lower parts of alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Calita soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and crops. The main nonirrigated crop is small grains, and the main irrigated crops are alfalfa, barley, wheat, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,475 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this soil, a two-year fallow rotation is most suitable. The soil is well suited to irrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces

runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

CaD—Calita loam, 8 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone and sandstone. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,500 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 7 inches thick. Below this to a depth of 60 inches or more is pale brown and light yellowish loam.

Included in this unit are about 5 percent Doyce loam, 4 to 8 percent slopes, and 5 percent Calita loam, 4 to 8 percent slopes, on alluvial fans. Five percent of this map unit is Borvant cobbly loam, 2 to 8 percent slopes, on the higher parts of alluvial fans, and 5 percent is Juab loam, 4 to 8 percent slopes, on the lower parts of alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Calita soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,475 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is suited to range seeding. The main limitation of the soil is slope. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, balsamroot, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this soil, a two-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IVe-U, nonirrigated. The range site is Upland Loam.

CbF—Calpac-Agassiz complex, 30 to 70 percent slopes. This map unit is on mountain sides. In most areas the present vegetation is mainly shrubs and grasses. Elevation is 6,000 to 7,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 55 percent Calpac very cobbly loam, 30 to 70 percent slopes, and about 35 percent Agassiz very stony loam, 30 to 70 percent slopes. The Calpac soil is on north-facing side slopes, and the Agassiz soil is on south-facing side slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Lundy very cobbly loam, 30 to 70 percent slopes, on hillsides, and 5 percent Hamtah loam, 30 to 70 percent slopes, on mountainsides. The percentage of included soils varies from one area to another.

The Calpac soil is deep and well drained. It formed in colluvium derived dominantly from limestone, sandstone, and quartzite. Typically, the surface layer is brown very cobbly loam about 21 inches thick. The subsoil is dark yellowish brown very flaggy loam about 13 inches thick. The substratum is brown extremely stony loam about 7 inches thick. Limestone is at a depth of 41 inches. Depth to limestone ranges from 40 to 60 inches.

Permeability of the Calpac soil is moderate. Available water capacity is about 3 to 4 inches. Water supplying capacity is 7 to 11 inches. Effective rooting depth is 40 to 60 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

The Agassiz soil is shallow and somewhat excessively drained. It formed in residuum derived dominantly from limestone. Typically, the surface layer is brown very stony loam about 14 inches thick. The underlying material is yellowish brown extremely stony loam about 5 inches thick. Bedrock is at a depth of 19 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Agassiz soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 7 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Calpac soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bearded wheatgrass, antelope bitterbrush, bluebunch wheatgrass, and mountain brome. The normal expected yield of total air-dried herbage is about 1,800 pounds per acre.

The potential plant community on the Agassiz soil is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, muttongrass, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,100 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Gambel oak may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment is not practical because of the shallow depth of the Agassiz soil and steepness of slope.

This unit is very poorly suited to range seeding. The main limitations are slope and content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, stoniness, and shallow depth to bedrock in the Agassiz soil.

This map unit is in capability unit VIIs-M4, nonirrigated. The Calpac soil is in the Mountain Stony Loam range site, and the Agassiz soil is in the Mountain Shallow Loam range site.

CcF—Calpac-Lundy complex, 30 to 70 percent slopes. This map unit is on mountain sides. Slopes are long and convex. In most areas the present vegetation is mainly shrubs and grasses. Elevation is 6,000 to 7,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 60 percent Calpac very cobbly loam, 30 to 70 percent slopes, and 30 percent Lundy very cobbly loam, 30 to 70 percent slopes. The Calpac soil is on north- and west-facing side slopes, and the Lundy soil is on ridges and escarpments. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Rock outcrop, on ridges and points, and 5 percent Kitchell cobbly loam, 30 to 70 percent slopes, on north-facing mountainsides. The percentage of inclusions varies from one area to another.

The Calpac soil is deep and well drained. It formed in colluvium and residuum derived dominantly from limestone, sandstone, and quartzite. Typically, the surface layer is brown very cobbly loam about 21 inches thick. The subsoil is dark yellowish brown very flaggy loam about 13 inches thick. The substratum is brown extremely stony loam about 7 inches thick. Limestone is at a depth of 41 inches. Depth to bedrock ranges from 40 to 60 inches.

Permeability of the Calpac soil is moderate. Available water capacity is about 3.0 to 4.0 inches. Water supplying capacity is 7 to 11 inches. Effective rooting depth is 40 to 60 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

The Lundy soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone and sandstone. Typically, the surface layer is dark brown very cobbly loam about 9 inches thick. The underlying material is pale brown very cobbly loam about 10 inches thick. Limestone is at a depth of 19 inches. Depth to limestone ranges from 10 to 20 inches.

Permeability of the Lundy soil is moderate. Available water capacity is about 1 to 2 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Calpac soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bearded wheatgrass, antelope bitterbrush, bluebunch wheatgrass, and mountain brome. The normal expected yield of total air-dried herbage is about 1,800 pounds per acre.

The potential plant community on the Lundy soil is about 65 percent perennial grasses, 3 percent forbs, 7 percent shrubs, and 25 percent trees. Important plant species are bluebunch wheatgrass, Utah juniper, Indian ricegrass, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Gambel oak may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment is not practical because of the shallow depth of the Lundy soil and steepness of slope.

This unit is very poorly suited to range seeding. The main limitations are slope and content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, stoniness, and the shallow depth to bedrock of the Lundy soil.

This map unit is in capability unit VIIs-M4, nonirrigated. The Calpac soil is in Mountain Stony Loam range site, and the Lundy soil is in Upland Shallow Loam (Juniper) range site.

CdE—Checkett, moist-Rock outcrop complex, 8 to 40 percent slopes. This map unit is on hillsides. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 70 percent Checkett stony loam, moist, 8 to 40 percent slopes, and 15 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Hiko Peak stony loam, 8 to 15 percent slopes, on alluvial fans, and 5 percent Amtoft stony loam, 8 to 30 percent slopes, on hillsides. The percentage of the included soils varies from one area to another.

The Checkett soil is shallow and excessively drained. It formed in residuum and colluvium derived dominantly from igneous rocks. Typically, the surface layer is pale brown stony loam about 2 inches thick. The subsoil is pale brown and brown very gravelly clay loam about 10 inches thick. The substratum is brown extremely cobbly loam about 6 inches thick. Basalt is at a depth of 18 inches. Depth to basalt ranges from 10 to 20 inches.

Permeability of the Checkett soil is moderate. Available water capacity is about 1 to 2 inches. Water supplying capacity is 3 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 0.5 inch to 1 percent. Runoff is rapid, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 550 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment is not practical because of shallow depth to basalt.

This unit is very poorly suited to range seeding. The main limitations are depth to rock and content of rock fragments.

If this unit is used for recreation or homesite development, the main limitations are stoniness, slope, and shallow depth to bedrock.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

Ce—Cheebe fine sandy loam. This very deep, well drained soil is on lake terraces. It formed in lake sediment derived dominantly from limestone, sandstone, and shale. Slopes are 0 to 1 percent and are long and concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 4,850 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light gray fine sandy loam about 8 inches thick. The subsoil is very strongly alkaline and very strongly calcareous, light gray silty clay about 36 inches thick. The substratum is white silty clay loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Cheebe silty clay loam and 5 percent Woodrow silt loam, 0 to 1 percent slopes, on lake plains. Five percent of the map unit is Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes, and 5 percent is Harding silt loam, on lake terraces. The percentage of the included soils varies from one area to another.

Permeability of this Cheebe soil is slow. Available water capacity is about 5 to 8 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are Wyoming big sagebrush, Indian ricegrass, and needleandthread. The normal expected yield of total air-dried herbage is about 900 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is suited to range seeding where precipitation is more than 10 inches. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitations are the content of clay and the very strongly alkaline and very strongly calcareous subsoil.

This unit is poorly suited to recreational uses and homesite development. The main limitations are shrink-swell potential, slow permeability, and the content of alkali in the subsoil.

This map unit is in capability units IVs-28, irrigated, and VIIs-S8, nonirrigated. The range site is Semidesert Loam.

Cf—Cheebe silty clay loam. This very deep, well drained soil is on lake terraces. It formed in lake sediment derived dominantly from limestone, sandstone, and shale. Slopes are 0 to 1 percent and are long and concave. The native vegetation is mainly salt-tolerant shrubs and grasses. Elevation is 4,800 to 4,850 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silty clay loam about 8 inches thick. The subsoil is very strongly alkaline and very strongly calcareous, light gray silty clay about 36 inches thick. The substratum is white silty clay loam and light gray clay to a depth of 60 inches or more.

Included in this unit are about 5 percent Cheebe fine sandy loam and 5 percent Woodrow silt loam, 0 to 1 percent slopes, on lake plains. Five percent of the map unit is Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes, and 5 percent Harding silt loam, on lake terraces. The percentage of the included soils varies from one area to another.

Permeability of this Cheebe soil is slow. Available water capacity is about 5 to 8 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is slow, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat and irrigated alfalfa.

The potential plant community on this soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing. Brush management by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is poorly suited to range seeding. The main limitation of the soil for seeding is the salinity. Plants suitable for seeding include Indian ricegrass and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitations are the content of clay and the very strongly alkaline and very strongly calcareous subsoil.

This unit is poorly suited to recreational uses and homesite development. The main limitations are shrink-swell potential, slow permeability, and the content of alkali in the subsoil.

This map unit is in capability units IVs-28, irrigated, and VIIs-S8, nonirrigated. The range site is Alkali Flat.

CG—Cumulic Haploxerolls, sloping. These very deep, well drained soils are on stream terraces and fans in valleys. The soils formed in alluvium and colluvium derived dominantly from sandstone, limestone, and conglomerate rocks. Slopes are 6 to 40 percent and are short and concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,200 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

No one profile is typical of Cumulic Haploxerolls, but, in one of the more common ones, the surface layer is dark brown loam about 35 inches thick. The underlying material is light brown gravelly loam to a depth of 60 inches or more. These soils are made up of 0 to 85 percent rock fragments.

The surface layer ranges from loam to very stony loam, and the underlying layer ranges from gravelly loam to very stony loamy sand. Both layers range from slightly acid to mildly alkaline.

Included in this unit is a soil that has a dark surface layer less than 20 inches thick. This included soil makes up about 10 percent of an area.

Permeability of these Cumulic Haploxerolls is moderate to moderately rapid. Available water capacity is about 3.5 to 6 inches. Water supplying capacity is 7 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is slow, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on these soils are about 45 percent perennial grasses, 15 percent forbs, and 40 percent shrubs. Important plant species are basin wildrye, big sagebrush, and western wheatgrass.

Management practices needed to maintain or improve the potential plant community include proper grazing use and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing; however, brush management may effect the ecology of the area. This should be given special consideration before clearing. Brush management by prescribed burning or chemical or mechanical treatment

and proper grazing use can improve deteriorated rangeland. The main limitations are stoniness, the hazard of flooding, and slope.

This unit is well suited to range seeding. The main limitation is stoniness in some areas. Plants suitable for seeding include any native plant suitable for this site and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to recreational uses and homesite development.

This map unit is too variable to show interpretive groupings.

DaC—Dagor loam, 2 to 8 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from quartzite and igneous rocks. Slopes are medium and are undulating. The native vegetation is mainly grasses and shrubs. Elevation is 5,400 to 6,200 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown and brown loam about 29 inches thick. The upper 20 inches of the underlying material is yellowish brown loam. The lower part is yellowish brown very fine sandy loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Justesen loam, 4 to 15 percent slopes; 5 percent Donnardo stony loam, 2 to 8 percent slopes; and 5 percent Juab loam, 2 to 4 percent slopes. These soils are on alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Dagor soil is moderate. Available water capacity is about 10 to 11 inches. Water supplying capacity is 11 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight. This soil is subject to rare periods of flooding.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grain crops.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is poorly suited to recreational uses and homesite development. It is limited as a site for camp areas and homesites mainly by the rare periods of flooding.

This map unit is in capability unit IIIe-U, nonirrigated. The range site is Upland Loam.

DbD—Deer Creek cobbly loam, 6 to 25 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from quartzite, sandstone, and igneous rocks. Slopes are long and convex or concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,600 to 7,000 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown cobbly loam about 7 inches thick. The subsoil is yellowish brown cobbly clay about 28 inches thick. The substratum is light yellowish brown very cobbly clay loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Borvant cobbly loam, 2 to 8 percent slopes, and 5 percent Justesen loam, 4 to 15 percent slopes, on alluvial fans. About 5 percent is Reywat very stony loam, 10 to 30 percent slopes, on hillsides. The percentage of these included soils varies from one area to another.

Permeability of the Deer Creek soil is slow. Available water capacity is about 6 to 8.5 inches. Water supplying capacity is 9.5 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 3 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or

mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by prescribed burning or by chemical or mechanical methods, the soil may be subject to a greater hazard of erosion.

This unit is suited for range seeding. The main limitations are slope and the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to nonirrigated crops. The main limitations are small inaccessible areas and a short growing season. If nonirrigated small grains are grown, a one-year fallow rotation is most suitable.

If this unit is used for recreational development, the main limitations are slope and small stones. This unit is poorly suited to homesite development. The main limitations are shrink-swell potential and slope.

This map unit is in capability unit VIe-U, nonirrigated. The range site is Upland Loam.

DcD—Deer Creek-Borvant complex, 2 to 25 percent slopes. This map unit is on alluvial fans. Slopes are long and concave or convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,600 to 7,000 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 41 to 52 degrees F, and the average freeze-free season is 70 to 140 days.

This unit is about 45 percent Deer Creek cobbly loam, 6 to 25 percent slopes, and 35 percent Borvant cobbly loam, 2 to 8 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Yeates Hollow stony loam, 10 to 25 percent slopes, and 5 percent Justesen loam, 4 to 15 percent slopes, on alluvial fans. About 5 percent of the map unit is Reywat very stony loam, 10 to 30 percent slopes, which is on hillsides. The percentage of the included soils varies from one area to another.

The Deer Creek soil is very deep and well drained. It formed in alluvium derived dominantly from quartzite, sandstone, and igneous rocks. Typically, the surface layer is dark grayish brown cobbly loam about 7 inches thick. The subsoil is yellowish brown cobbly clay about 28 inches thick. The substratum is light yellowish brown very cobbly clay loam to a depth of 60 inches or more.

Permeability of the Deer Creek soil is slow. Available water capacity is about 6 to 8.5 inches. Water supplying capacity is 9.5 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 3 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

Borvant soil is shallow and somewhat excessively drained. It formed in alluvium derived dominantly from limestone and sandstone. Typically, the surface layer is dark grayish brown cobbly loam about 9 inches thick. The underlying material is very strongly calcareous, pale brown very gravelly loam about 10 inches thick. A carbonate cemented hardpan, 7 inches thick, is at a depth of 19 inches. Depth to the hardpan ranges from 10 to 20 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpan.

Permeability of the Borvant soil is moderate. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Deer Creek soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve vegetation on the Deer Creek soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can be used to improve deteriorated rangeland. Where brush is managed by these methods, the soil may be subject to a higher hazard of erosion.

This Deer Creek soil is suited to range seeding. The main limitations are slope and the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

The potential plant community on the Borvant soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Indian ricegrass, Utah juniper, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,250 pounds per acre.

Management practices needed to maintain or improve vegetation on the Borvant soil include proper grazing use, proper seasonal use, good distribution of water, and a planned grazing system. Dense stands of Utah juniper may develop as the result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment is not practical because of the shallow depth to the hardpan.

This Borvant soil is poorly suited to range seeding. The main limitation is the shallow depth to the hardpan.

This unit is poorly suited to nonirrigated crops. The main limitations are the shallow depth to the hardpan of the Borvant soil and a short growing season. If nonirrigated small grains are grown, a one-year fallow rotation is most suitable.

If this unit is used for recreational development, the main limitations are shallow depth to hardpan in the Borvant soils, slope, and stoniness. This unit is poorly suited to homesite development. The main limitations are the shallow depth to the hardpan of the Borvant soil, shrink-swell potential, and slope.

This map unit is in capability unit VIIs-U3J, nonirrigated. The Deer Creek soil is in Upland Loam range site, and the Borvant soil is in Upland Shallow Loam (Juniper-Pinyon) range site.

DdC—Donnardo stony loam, 2 to 8 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,500 to 6,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown stony loam about 10 inches thick. Below this to a depth of 60 inches or more is pale brown very cobbly loam.

Included in this unit are about 5 percent Donnardo stony loam, 8 to 25 percent slopes; 5 percent Pharo very stony loam, 3 to 10 percent slopes; 5 percent Borvant cobbly loam, 2 to 8 percent slopes; and 5 percent Juab loam, 2 to 4 percent slopes. These included soils are on alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of the Donnardo soil is moderately rapid. Available water capacity is about 4.5 to 7 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 900 pounds per acre (fig. 6).

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is suited to range seeding. The main limitation is the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is moderately suited to recreational uses and homesite development. The main limitation is stoniness.

This map unit is in capability unit VIs-UX, nonirrigated. The range site is Upland Stony Loam.

DdE—Donnardo stony loam, 8 to 25 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are medium and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,500 to 6,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown stony loam about 10 inches thick. Below this to a depth of 60 inches or more is pale brown very cobbly loam.

Included in this unit are about 5 percent Donnardo stony loam, 2 to 8 percent slopes; 5 percent Pharo very stony loam, 3 to 10 percent slopes; 5 percent Borvant cobbly loam, 8 to 25 percent slopes; and 5 percent Juab loam, 4 to 8 percent slopes. These included soils are on alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Donnardo soil is moderately rapid. Available water capacity is about 4.5 to 7 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 900 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by prescribed burning or chemical or mechanical methods, this soil may be subject to a greater hazard of erosion.

This unit is suited to range seeding. The main limitations are slope and the content of rock fragments.

Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

This unit is moderately suited to recreational uses and homesite development. The main limitation is slope.

This map unit is in capability unit VIs-UX, nonirrigated. The range site is Upland Stony Loam.

DdF—Donnardo stony loam, 25 to 40 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are medium and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,500 to 6,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown stony loam about 10 inches thick. Below this to a depth of 60 inches or more is pale brown very cobbly loam.

Included in this unit are about 5 percent Donnardo stony loam, 8 to 25 percent slopes; 5 percent Borvant



Figure 6.—Wyoming big sagebrush on Donnardo stony loam, 2 to 8 percent slopes, which is in the Upland Stony Loam range site.

cobbly loam, 8 to 25 percent slopes; 5 percent Hiko Peak stony sandy loam, 15 to 25 percent slopes; and 5 percent Sandall very cobbly loam, 25 to 60 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of this Donnardo soil is moderately rapid. Available water capacity is about 4.5 to 7 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 900 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas.

This unit is very poorly suited to range seeding. The main limitations are slope and the content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. It is limited mainly by steepness of slope.

This map unit is in capability unit VIs-UX, nonirrigated. The range site is Upland Stony Loam.

DeF—Donnardo-Hiko Peak complex, 25 to 40 percent slopes. This map unit is on alluvial fans. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,500 to 6,200 feet. The average annual precipitation is about 8 to 14 inches, the mean annual air temperature 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 50 percent Donnardo stony loam, 25 to 40 percent slopes, and about 35 percent Hiko Peak stony sandy loam, 25 to 40 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Borvant cobbly loam, 8 to 25 percent slopes; 5 percent Donnardo stony loam, 8 to 25 percent slopes; and 5 percent Hiko Peak stony sandy loam, 15 to 25 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another.

The Donnardo soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone, limestone, and quartzite. Typically, the surface layer is brown stony loam about 10 inches thick. Below this to a depth of 60 inches or more is pale brown very cobbly loam.

Permeability of the Donnardo soil is moderately rapid. Available water capacity is about 4.5 to 7 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

The Hiko Peak soil is very deep and well drained. It formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Typically, the surface layer is pale brown stony sandy loam about 7 inches thick. The subsoil is light yellowish brown gravelly sandy loam about 12 inches thick. The substratum is very pale brown very gravelly sandy loam to a depth of 60 inches or more.

Permeability of the Hiko Peak soil is moderately rapid. Available water capacity is about 3.5 to 4.5 inches. Water supplying capacity is 5 to 6.5 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Donnardo soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 900 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas.

This soil is very poorly suited to range seeding. The main limitations are slope and the content of rock fragments.

The potential plant community on the Hiko Peak soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are Wyoming big sagebrush, shadscale, Indian ricegrass, and needleandthread. The normal expected yield of total air-dried herbage is about 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, this soil may be subject to a higher hazard of erosion.

This soil is very poorly suited to range seeding. The main limitations are low precipitation, slopes, and the content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. It is limited mainly by stoniness and steepness of slope.

The map unit is in capability unit VIIs-SX, nonirrigated. The Donnardo soil is in Upland Stony Loam range site, and the Hiko Peak soil is in Semidesert Stony Loam range site.

DfB—Doyce loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. This soil formed in alluvium derived dominantly from limestone, sandstone, and quartzite. Slopes are long and concave or convex (fig. 7). The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,300 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 10 inches thick. The subsoil is pale brown clay loam about 9 inches thick. The substratum is very pale brown gravelly loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Doyce loam, 4 to 8 percent slopes; 5 percent Calita loam, 2 to 4 percent slopes; 3 percent Juab loam, 2 to 4 percent slopes; and 2 percent Mountainville gravelly loam, sandy substratum, 2 to 4 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of this Doyce soil is moderately slow. Available water capacity is about 7.5 to 9 inches. Water supplying capacity is 9 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, nonirrigated small grains, and irrigated small grains and alfalfa.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch



Figure 7.—This very deep, well drained Doyce loam, 2 to 4 percent slopes, is used for small grains, irrigated alfalfa and pasture, and rangeland.

wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. This unit is well suited to irrigated crops. If irrigated crops are grown, sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses. It is moderately suited to homesite development. The main limitation for homesites is shrink-swell potential.

This map unit is in capability units IIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

DfC—Doyce loam, 4 to 8 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, sandstone, and quartzite. Slopes are long and concave or convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,300 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 10 inches thick. The subsoil is pale brown clay loam about 9 inches thick. The substratum is very pale brown gravelly loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Doyce loam, 2 to 4 percent slopes; 5 percent Calita loam, 4 to 8 percent slopes; 3 percent Juab loam, 4 to 8 percent slopes; and 2 percent Mountainville gravelly loam, sandy substratum, 2 to 4 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of the Doyce soil is moderately slow. Available water capacity is about 7.5 to 9 inches. Water supplying capacity is 9 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, nonirrigated small grains, and irrigated small grains and alfalfa.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. This unit is well suited to irrigated crops. If irrigated crops are grown, sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses. It is moderately suited to homesite development. The main limitation is shrink-swell potential.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

DgC—Doyce silt loam, loamy substratum, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from limestone, sandstone, and quartzite. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,700 to 6,300 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown silt loam about 11 inches thick. The subsoil is pale brown clay loam about 19 inches thick. The substratum is very pale brown silt loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Doyce loam, 2 to 4 percent slopes; 5 percent Calita loam, 2 to 4 percent slopes; and 5 percent Juab loam, 2 to 4 percent slopes. These inclusions are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of this Doyce soil is moderately slow. Available water capacity is about 10 to 12 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content

of the surface layer is 2 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, nonirrigated small grains, and irrigated small grains and alfalfa.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. This unit is well suited to irrigated crops. If irrigated crops are grown, sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses. It is suited to homesite development. The main limitation is shrink-swell potential.

This map unit is in capability units IIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

DhD—Dry Creek cobbly loam, 4 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,200 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown cobbly loam about 10 inches thick. The upper part of the subsoil is yellowish brown cobbly clay about 16 inches thick. The lower part of the subsoil is light yellowish brown gravelly clay and very gravelly clay loam 14 inches thick. The substratum is white very gravelly clay loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Hupp gravelly loam, 8 to 15 percent slopes; 5 percent Parleys loam, 4 to 8 percent slopes; and 5 percent Reebok cobbly loam, 4 to 15 percent slopes. All of these included soils are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of this Dry Creek soil is slow. Available water capacity is about 6.5 to 8.5 inches. Water supplying capacity is 9 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and nonirrigated winter wheat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by prescribed burning or chemical or mechanical methods, the soil may be subject to a greater hazard of erosion.

This unit is suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is moderately suited to recreational uses. It is limited mainly by slow permeability. This unit is poorly suited to homesite development. It is limited mainly by slope and stoniness.

This map unit is in capability unit IVe-U5, nonirrigated. The range site is Upland Loam.

DkD—Dry Creek-Reebok complex, 4 to 15 percent slopes. This map unit is on alluvial fans and hillsides. Slopes are medium in length and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,200 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 50 percent Dry Creek cobbly loam, 4 to 15 percent slopes, and 30 percent Reebok cobbly

loam, 4 to 15 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Hupp gravelly loam, 8 to 15 percent slopes, and 5 percent Parleys loam, 4 to 8 percent slopes, on alluvial fans. Five percent of this map unit is Lodar very cobbly loam, 3 to 30 percent slopes, which is on hillsides. The percentage of these included soils varies from one area to another.

The Dry Creek soil is very deep and well drained. It formed in alluvium derived dominantly from igneous rocks. Typically, the surface layer is brown cobbly loam about 10 inches thick. The subsoil is brown cobbly clay about 16 inches thick. The substratum is yellowish brown gravelly clay and very gravelly clay loam to a depth of 60 inches.

Permeability of the Dry Creek soil is slow. Available water capacity is about 6.5 to 8.5 inches. Water supplying capacity is 9 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

The Reebok soil is shallow and well drained. It formed in alluvium and colluvium derived dominantly from igneous rocks. Typically, the surface layer is dark grayish brown cobbly loam about 5 inches thick. The subsoil is brown very cobbly clay loam about 10 inches thick. The substratum is pale brown extremely gravelly loam about 4 inches thick. A lime cemented hardpan, 4 inches thick, is at a depth of 19 inches. Depth to the cemented hardpan ranges from 10 to 20 inches. Below this to a depth of 60 inches or more are stratified layers of extremely gravelly loam and indurated hardpans.

Permeability of the Reebok soil is moderate. Available water capacity is about 1.5 to 3 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Dry Creek soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

The potential plant community on the Reebok soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, Nevada bluegrass, and black sagebrush. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by prescribed burning or chemical or mechanical methods, the soil may be subject to a greater hazard of erosion.

This unit is suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation, the main limitations are the shallow depth to the hardpan of the Reebok soil and the slope and stoniness of the Dry Creek soil. This unit is poorly suited to homesite development. The main limitations are the shallow depth to the hardpan of the Reebok soil and the shrink-swell potential.

This map unit is in capability unit VIIs-U3, nonirrigated. The Dry Creek soil is in Upland Loam range site, and the Reebok soil is in Upland Shallow Loam range site.

Dm—Duggins loam. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from limestone, sandstone, and shale. Slopes are 0 to 2 percent; they are medium in length and convex or concave. Elevation is 4,500 to 5,000 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 5 inches thick. Below this to a depth of 60 inches or more is light brown clay loam and clay.

Included in this unit are about 5 percent Woodrow silt loam, 1 to 2 percent slopes, and 5 percent Benjamin silty clay loam, on flood plains. Five percent of this map unit is Genola silt loam, 1 to 2 percent slopes, which is on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Duggins soil is slow. Available water capacity is about 8 to 9 inches. Water supplying capacity is 6 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used for irrigated pasture and irrigated crops. The main irrigated crops are alfalfa, small grains, and corn used for silage.

This unit is moderately suited to irrigated crops. The main limitation is slow permeability. Furrow, border, corrugation, and sprinkler irrigation systems can be used on this soil. If furrow or corrugation irrigation systems are used, runs should be on the contour, or across the slope. Irrigation water should be applied at a rate that insures optimum production without increasing runoff, deep percolation, and erosion. Because of the slow

permeability of the soil, the application of water should be regulated so that it does not stay on the surface and damage the crops. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is moderately suited to recreational uses. It is limited mainly by slow permeability. This unit is poorly suited to homesite development. It is limited mainly by shrink-swell potential.

This map unit is in capability unit IIIs-25, irrigated.

DN—Dune land. This map unit is on ridges and in troughs. It consists of fine sand that is shifted by the wind. Slopes are about 0 to 70 percent. The sand is devoid of vegetation, except for some isolated spots that support a few clumps of grasses or juniper trees.

This unit is poorly suited to use as rangeland because it supports little vegetation and is characterized by shifting sand. It is well suited to use as a recreational area.

This map unit is in capability class VIII.

FaB—Firmage gravelly loam, dry, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Slopes are short and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown gravelly loam about 2 inches thick. The subsoil is very pale brown gravelly loam about 7 inches thick. The substratum is very pale brown gravelly loam and cobbly loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Genola silt loam, 2 to 5 percent slopes; 5 percent Linoyer very fine sandy loam, 2 to 5 percent slopes; and 5 percent Shabliss very fine sandy loam, 2 to 5 percent slopes. These inclusions are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Firmage soil is moderate. Available water capacity is about 5 to 8 inches. Water supplying capacity is 6.5 to 8 inches. The organic matter content of the surface layer is 0.5 to 1 percent. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa and small grains.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and needleandthread. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

The unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion is a hazard on the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIe-2, irrigated, and VIe-U, nonirrigated. The range site is Semidesert Loam.

FbF—Flygare loam, 30 to 70 percent slopes. This very deep, well drained soil is on mountain sides. Slopes are long and convex. The soil formed in colluvium derived dominantly from limestone, quartzite, and sandstone. In most areas the present vegetation is mainly aspens and grasses. Elevation is 7,000 to 10,400 feet. The average annual precipitation is 22 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

Typically, the surface layer is very dark grayish brown loam about 20 inches thick. The subsurface layer is light brownish gray very cobbly loam about 11 inches thick. The upper part of the subsoil is pale brown very gravelly clay loam about 18 inches thick. The lower part to a depth of 60 inches or more is light yellowish brown extremely cobbly loam.

Included in this unit are about 5 percent Parkay very stony loam, 30 to 70 percent slopes; 5 percent Agassiz very stony loam, 30 to 70 percent slopes; and 2 percent Starley very cobbly loam, 30 to 70 percent slopes. These soils are on mountainsides. Yeates Hollow stony loam, 25 to 40 percent slopes, on alluvial fans, makes up 3 percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Flygare soil is moderate. Available water capacity is about 5 to 7.5 inches. Water supplying capacity is 11 to 16 inches. Effective rooting depth is 60 inches or more. The organic matter content of the

surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used for woodland grazing and wildlife habitat.

Potential vegetation is quaking aspen and an understory of mountain brome, nodding bromegrass, blue wildrye, bearded wheatgrass, and sweet-anise and some aspen peavine. The composition of the potential vegetation changes because of grazing by livestock or wildlife or because of other disturbances. Some plants increase; others decrease. Proper grazing is an important management practice to maintain adequate plant cover and desired composition.

This soil is suited to quaking aspen for wood products. It is capable of producing about 2,500 cubic feet per acre, or 11,000 board feet (Scribner rule), of merchantable timber from a fully stocked, even-aged stand of 80-year-old trees. Plant competition delays the regeneration of quaking aspen but does not prevent the eventual development of a fully stocked, normal stand of trees. Using conventional methods to harvest trees is difficult because of the slope.

This map unit is in capability unit VIIe-HA, nonirrigated.

FcF—Flygare-Parkay-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on mountain sides. Slopes are long and convex. In most areas the present vegetation is mainly shrubs and grasses. Elevation is 7,000 to 10,400 feet. The average annual precipitation is 16 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

This unit is made up of about 35 percent Flygare loam; 30 percent Parkay very stony loam, 30 to 70 percent slopes; and 20 percent Rock outcrop. The soils and Rock outcrop are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Agassiz very stony loam, 30 to 70 percent slopes, on mountainsides, and 5 percent Wallsburg very cobbly loam, 25 to 70 percent slopes, on hillsides. Yeates Hollow stony loam, 25 to 40 percent slopes, on alluvial fans, makes up 5 percent of the unit. The percentage of the included soils varies from one area to another.

The Flygare soil is very deep and well drained. It formed in colluvium derived dominantly from limestone, quartzite, and sandstone. Typically, the surface layer is very dark grayish brown loam about 20 inches thick. The subsurface layer is light brownish gray very cobbly loam about 11 inches thick. The upper part of the subsoil is pale brown very gravelly clay loam about 18 inches thick. The lower part to a depth of 60 inches or more is light yellowish brown extremely cobbly loam.

Permeability of this Flygare soil is moderate. Available water capacity is about 5 to 7.5 inches. Water supplying capacity is 9 to 16 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

The Parkay soil is deep and well drained. It formed in colluvium and residuum derived dominantly from quartzite, sandstone, and limestone. Typically, the surface layer is dark brown very stony loam about 18 inches thick. The subsoil is yellowish brown very cobbly clay loam about 24 inches thick. The substratum is yellowish brown very gravelly clay loam about 5 inches thick. Fractured limestone is at a depth of 47 inches. Depth to bedrock ranges from 40 to 60 inches.

Permeability of this Parkay soil is moderately slow. Available water capacity is about 3.5 to 6.5 inches. Water supplying capacity is 8 to 12 inches. Effective rooting depth is 40 to 60 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for woodland grazing and wildlife habitat.

Potential vegetation on the Flygare soil is quaking aspen and an understory of mountain brome, nodding bromegrass, blue wildrye, bearded wheatgrass, and sweet-anise and some aspen peavine. The composition of the potential vegetation changes because of grazing by livestock or wildlife or because of other disburbances. Some plants increase; others decrease. Proper grazing is an important management practice for maintaining adequate plant cover and desired composition.

The Flygare soil is suited to quaking aspen for wood products. It is capable of producing about 2,500 cubic feet per acre, or 11,000 board feet (Scribner rule), of merchantable timber from a fully stocked, even-aged stand of 80-year-old trees. Plant competition delays the regeneration of quaking aspen but does not prevent the eventual development of a fully stocked, normal stand of trees. Using conventional methods of harvesting trees is difficult because of the slope. High lead logging is practical because it is more efficient and less damaging to the surface of the soil.

The potential plant community on the Parkay soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Idaho fescue,. and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,700 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is

managed by these methods, however, the soil may be subject to a greater hazard of erosion.

This soil is poorly suited to range seeding. The main limitation is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, large stones, and Rock outcrop.

This map unit is in capability unit VIIe-HA, nonirrigated. The Parkay soil is in Mountain Stony Loam range site.

FdF—Flygare-Starley association, very steep. This map unit is on mountain sides. Slopes are 30 to 70 percent and are long and convex. In most areas the present vegetation is mainly shrubs and grasses. Elevation is 7,000 to 10,400 feet. The average annual precipitation is 22 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

This unit is about 45 percent Flygare loam, 30 to 70 percent slopes, mainly on north-facing slopes, and 35 percent Starley very cobbly loam, 30 to 70 percent slopes, mainly on south-facing slopes. The soils in this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Parkay very stony loam, 30 to 70 percent slopes, north-facing, and 8 percent Starley very cobbly loam, 3 to 30 percent slopes, south-facing. Rock outcrop is on ridgetops and escarpments and makes up 6 percent of the unit. The percentage of these inclusions varies from one area to another.

The Flygare soil is very deep and well drained. It formed in colluvium derived dominantly from limestone, quartzite, and sandstone. Typically, the surface layer is very dark grayish brown loam about 20 inches thick. The subsurface layer is light brownish grey very cobbly loam about 11 inches thick. The upper part of the subsoil is pale brown very gravelly clay loam about 18 inches thick. The lower part to a depth of 60 inches or more is light yellowish brown extremely cobbly loam.

Permeability of this Flygare soil is moderate. Available water capacity is about 5 to 7.5 inches. Water supplying capacity is 9 to 16 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

The Starley soil is shallow and excessively drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is dark grayish brown very cobbly loam about 16 inches thick. The underlying material is brown very cobbly loam about 3 inches thick. Fractured limestone is at a depth of 19 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Starley soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 4 to 8 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for woodland grazing and wildlife habitat.

The potential vegetation on the Flygare soil is quaking aspen and an understory of mountain brome, nodding bromegrass, blue wildrye, bearded wheatgrass, and sweet-anise and some aspen peavine. The composition of the potential vegetation changes because of grazing by livestock or wildlife or because of other disturbances. Some plants increase; others decrease. Proper grazing is an important management practice to maintain adequate plant cover and desired composition.

This Flygare soil is suited to quaking aspen for wood products. It is capable of producing about 2,500 cubic feet per acre, or 11,000 board feet (Scribner rule), of merchantable timber from a fully stocked, even-aged stand of 80-year-old trees. Plant competition delays the regeneration of quaking aspen but does not prevent the eventual development of a fully stocked, normal stand of trees. Using conventional methods to harvest trees is difficult because of the slope. High lead logging is practical because it is more efficient and less damaging to the surface of the soil.

The potential plant community on the Starley soil is about 55 percent perennial grasses, 25 percent forbs, and 20 percent shrubs. Important plant species are slender wheatgrass, bearded wheatgrass, Kentucky bluegrass, and low sagebrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the potential plant community include proper grazing use and a planned grazing system.

This soil is poorly suited to range seeding. The main limitations are slope and depth to rock. Slope limits access by livestock and results in overgrazing of the less sloping areas. Mechanical treatment is not practical because the surface is stony and the slopes are steep.

This unit is poorly suited to recreational uses and homesite development. The main limitation is steepness of slope.

This map unit is in capability unit VIIe-HA, nonirrigated. The Starley soil is in Mountain Shallow Loam range site.

FeD—Fontreen stony loam, 3 to 25 percent slopes. This very deep, well drained soil is on mountainsides and alluvial fans. It formed in colluvium and alluvium derived dominantly from limestone and sandstone. Slopes are medium in length and are convex. In most areas the present vegetation is mainly junipers, grasses, and shrubs. Elevation is 5,200 to 6,800 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is grayish brown and brown stony loam and very cobbly loam about 10 inches thick.

Below this to a depth of 60 inches or more is very strongly calcareous, pale brown, white and very pale brown very gravelly loam and very cobbly loam.

Included in this unit are about 10 percent Borvant cobbly loam, 2 to 8 percent slopes, and 5 percent Donnardo stony loam, 2 to 8 percent slopes, on alluvial fans. Fontreen stony loam, 25 to 60 percent slopes, on hillsides, makes up 5 percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Fontreen soil is moderately rapid. Available water capacity is about 3.5 to 4.5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are Utah juniper, bluebunch wheatgrass, Wyoming big sagebrush, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 1,000 pounds per acre.

Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing.

This unit is suited to range seeding. The main limitation is the content of rock fragments. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitation is stoniness.

This map unit is in capability unit VIs-UX, nonirrigated. The range site is Upland Stony Loam (Juniper).

FeF—Fontreen stony loam, 25 to 60 percent slopes. This very deep, well drained soil is on mountainsides and alluvial fans. The soil formed in colluvium and alluvium derived dominantly from limestone and sandstone. Slopes are medium in length and are convex. In most areas the present vegetation is mainly junipers, grasses, and shrubs. Elevation is 5,200 to 6,800 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is grayish brown and brown stony loam and very cobbly loam about 10 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, pale brown, white and very pale brown very gravelly and very cobbly loam.

Included in this unit are about 10 percent Borvant cobbly loam, 8 to 25 percent slopes; 5 percent Fontreen stony loam, 3 to 25 percent slopes; and 5 percent Donnardo stony loam, 8 to 25 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of this Fontreen soil is moderately rapid. Available water capacity is about 3.5 to 4.5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are Utah juniper, bluebunch wheatgrass, Wyoming big sagebrush, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 1,000 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas.

This unit is poorly suited to range seeding. The main limitation is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope and stoniness.

This map unit is in capability unit VIIs-UX, nonirrigated. The range site is Upland Stony Loam (Juniper).

FfD—Fontreen-Borvant complex, 2 to 25 percent slopes. This map unit is on mountainsides and alluvial fans. Slopes are medium in length and are convex. In most areas the present vegetation is mainly juniper trees, grasses, and shrubs. Elevation is 5,600 to 6,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 41 to 52 degrees F, and the average freeze-free season is 70 to 140 days.

This unit is about 50 percent Fontreen stony loam, 3 to 25 percent slopes, and 35 percent Borvant cobbly loam, 2 to 8 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Fontreen stony loam, 25 to 60 percent slopes, and 2 percent Lodar very cobbly loam, 3 to 30 percent slopes, on hillsides. Five percent of the map unit is Donnardo stony loam, 2 to 8 percent slopes, and 3 percent is Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Fontreen soil is very deep and well drained. It formed in colluvium and alluvium derived dominantly from limestone and sandstone. Typically, the surface layer is grayish brown and brown stony loam and very cobbly loam about 10 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, pale

brown, white, and very pale brown very gravelly loam and very cobbly loam.

Permeability of this Fontreen soil is moderately rapid. Available water capacity is about 3.5 to 4.5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

The Borvant soil is shallow and somewhat excessively drained. It formed in alluvium derived dominantly from limestone and sandstone. Typically, the surface layer is dark grayish brown cobbly loam about 9 inches thick. The underlying material is very strongly calcareous, pale brown very gravelly loam about 10 inches thick. A lime cemented hardpan, 7 inches thick, is at a depth of 19 inches. Depth to hardpan ranges from 10 to 20 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans.

Permeability of this Borvant soil is moderate. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat and the production of juniper trees for fence posts.

The potential plant community on the Fontreen soil is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are Utah juniper, bluebunch wheatgrass, Wyoming big sagebrush, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 1,000 pounds per acre.

Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing.

This soil is suited to range seeding. The main limitation is the content of rock fragments. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

The potential plant community on the Borvant soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, Indian ricegrass, Utah juniper, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,250 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good distribution of water, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment is not practical because of the shallow depth of this soil.

This soil is very poorly suited to range seeding. The main limitations are depth to rock and content of rock fragments.

If this unit is used for recreation or homesite development, the main limitations are stoniness and the shallow depth to the hardpan of the Borvant soil.

This map unit is in capability unit VIIs-U3, nonirrigated. The Fontreen soil is in Upland Stony Loam (Juniper) range site, and the Borvant is in Upland Shallow Loam (Juniper-Pinyon) range site.

FgB—Freedom silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and low lake terraces. The soil formed in alluvium and lake sediment derived dominantly from sandstone, limestone, and shale. Slopes are medium in length and are convex or concave. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 8 inches thick. The next layer is light brownish gray and light gray silty clay loam about 32 inches thick. Below this to a depth of 60 inches or more is light gray silty clay.

Included in this unit are about 5 percent Woodrow silt loam, 1 to 2 percent slopes, in depressional areas; 5 percent Genola silt loam, 1 to 2 percent slopes, on alluvial fans; and 5 percent Firmage gravelly loam, dry, 2 to 4 percent slopes, on the higher parts of alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Freedom soil is moderately slow. Available water capacity is about 10 to 12 inches. Water supplying capacity is 5 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used for irrigated crops, mainly alfalfa; small grains; and corn used for silage.

This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to the unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is moderately suited to recreational uses and homesite development. The main limitations are

moderately slow permeability and shrink-swell potential. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IIIe-2, irrigated.

FgC—Freedom silt loam, 2 to 5 percent slopes. This very deep, well drained soil is on alluvial fans and low lake terraces. The soil formed in alluvium and lake sediment derived dominantly from sandstone, limestone, and shale. Slopes are medium in length and are convex or concave. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 8 inches thick. The next layer is light brownish gray and light gray silty clay loam about 32 inches thick. Below this to a depth of 60 inches or more is light gray silty clay.

Included in this unit are about 5 percent Woodrow silt loam, 2 to 5 percent slopes, in depressional areas; 5 percent Genola silt loam, 2 to 5 percent slopes, on alluvial fans; and 5 percent Firmage gravelly loam, dry, 2 to 4 percent slopes, on the higher parts of alluvial fans. The percentage of these included soils varies from one area to another. Also included are small areas of a soil, east of the Jericho sand dunes, which is similar to the Freedom soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Freedom soil is moderately slow. Available water capacity is about 10 to 12 inches. Water supplying capacity is 5 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used for irrigated crops, mainly alfalfa; small grains; and corn used for silage.

This unit is well suited to irrigated crops. Because of slope, a sprinkler or a drip irrigation system is most suitable for row crops. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is moderately suited to recreation and homesite development. The main limitations are moderately slow permeability and shrink-swell potential. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated.

FhB—Fridlo loam, 2 to 4 percent slopes. This very deep, moderately well drained soil is on lake terraces. It formed in lake sediment and alluvium derived dominantly from igneous rocks. Slopes are medium in length and are undulating. The native vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,900 to 5,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 8 inches thick. The upper part of the subsoil is pale brown clay loam and silty clay loam about 16 inches thick. The lower part of the subsoil is pale brown silt loam 10 inches thick. The subsoil is strongly to very strongly saline and moderately alkaline to very strongly alkaline. The substratum is moderately saline, pale brown silt loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Doyce loam, 2 to 4 percent slopes, and 5 percent Modoc fine sandy loam, cool, 4 to 8 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Fridlo soil is slow. Available water capacity is about 6 to 9 inches. Water supplying capacity is 8 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight. A seasonal high water table is at a depth of 48 to 72 inches from April through September.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 88 percent perennial grasses, 2 percent forbs, and 10 percent shrubs. Important plant species are inland saltgrass, alkali sacation, alkali bluegrass, sedges, and black greasewood. The normal expected yield of total air-dried herbage is about 1,750 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of inland saltgrass may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation is the content of salt and alkali in the soil.

This unit is poorly suited to irrigated or nonirrigated crops. The main limitation is the content of salt and alkali in the soil.

This unit is poorly suited to recreational uses and homesite development. The main limitations are the content of salt and alkali and slow permeability.

This map unit is in capability unit VIIs-U8, nonirrigated. The range site is Alkali Bottom.

GaBP—Genola fine sandy loam, hummocky, 1 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. The soil formed in alluvium

derived dominantly from sandstone, limestone, and igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,200 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is yellowish brown fine sandy loam about 6 inches thick. Below this to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 10 percent Linoyer very fine sandy loam, 1 to 2 percent slopes; 10 percent Genola silt loam, 1 to 2 percent slopes; and 5 percent Medburn fine sandy loam, 0 to 2 percent slopes. All of these included soils are on alluvial fans. The percentage of these soils varies from one area to another. Also included are small areas of a soil, near the Sevier Bridge Reservoir, which is similar to this Genola soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Genola soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to recreational development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. This unit is well suited to homesite development. The main limitation is the dustiness.

This map unit is in capability unit VIe-S, nonirrigated. The range site is Semidesert Loam.

GbA—Genola silt loam, 0 to 1 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. The soil formed in alluvium derived dominantly from sandstone, limestone, and igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,400 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. Below this to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 10 percent Linoyer very fine sandy loam, 0 to 1 percent slopes; 10 percent Genola silt loam, 1 to 2 percent slopes; and 5 percent Medburn fine sandy loam, 0 to 2 percent slopes. All of these soils are on alluvial fans. The percentage of these soils varies from one area to another. Also included are small areas of a soil, north of Elberta and near the Jericho sand dunes and the Sevier Bridge Reservoir, which is similar to this Genola soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Genola soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main crops are alfalfa hay, small grains, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover.

This unit is well suited to homesite development. The main limitation is the dustiness.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

GbB—Genola silt loam, 1 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. The soil formed in alluvium derived dominantly from sandstone, limestone, and igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,400 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. Below this to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 10 percent Linoyer very fine sandy loam, 1 to 2 percent slopes; 5 percent Genola silt loam, 0 to 1 percent slopes; 5 percent Genola silt loam, 2 to 5 percent slopes; and 5 percent Medburn fine sandy loam, 0 to 2 percent slopes. These soils are on alluvial fans. The percentage varies from one area to another. Also included are small areas of a soil, north of Elberta and near the Jericho sand dunes and the Sevier Bridge Reservoir, which is similar to this Genola soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Genola soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main crops are alfalfa hay, small grains, and corn used for silage (fig. 8).



Figure 8.—Irrigated alfalfa on Genola silt loam, 1 to 2 percent slopes, in the Goshen Valley.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to the unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational development. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining adequate plant cover.

This unit is well suited to homesite development. The main limitation is dustiness.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

GbC—Genola silt loam, 2 to 5 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from sandstone, limestone, and igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,400 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. Below this to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 10 percent Linoyer very fine sandy loam, 2 to 5 percent slopes; 10 percent Genola silt loam, 1 to 2 percent slopes; and 5 percent Medburn fine sandy loam, 2 to 4 percent slopes. These soils are on alluvial fans. The percentage varies from one area to another. Also included are small areas of a soil, near the Jericho sand dunes and the Sevier Bridge Reservoir, which is similar to the Genola soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Genola soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main crops are alfalfa hay, small grains, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of basin big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover.

This unit is well suited to homesite and urban development. The main limitation is dustiness.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

GcA—Genola silt loam, moist, 0 to 1 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. It formed in alluvium derived dominantly from sandstone, limestone, and igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 5,700 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. Below this to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 10 percent Genola silt loam, moist, 1 to 2 percent slopes; 5 percent Wales loam on 2 to 4 percent slopes; and 5 percent Juab loam, 0 to 2 percent slopes. These soils are on alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Genola soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and nonirrigated and irrigated crops. The main nonirrigated crop is small grains, and the main irrigated crops are alfalfa hay, small grains, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Sandberg bluegrass, basin wildrye, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,100 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, Nevada bluegrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a two-year fallow rotation is most suitable. The unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover.

This unit is well suited to homesite and urban development. The main limitation is dustiness.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

GcB—Genola silt loam, moist, 1 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. It formed in alluvium derived dominantly from sandstone and limestone. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 5,700 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. Below this to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 5 percent Genola silt loam, moist, 0 to 1 percent slopes; 5 percent Genola silt loam, moist, 2 to 5 percent slopes; 5 percent Wales loam, 2 to 4 percent slopes; and 5 percent Juab loam, 0 to 2 percent slopes. These soils are on alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Genola soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and nonirrigated and irrigated crops. The main nonirrigated crop is small grains, and the main irrigated crops are alfalfa hay, small grains, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Sandberg bluegrass, basin wildrye, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,100 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush

management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational development. Erosion and sedimentation can be controlled and the beauty of the area can be enhanced by maintaining adequate plant cover.

This unit is well suited to homesite and urban development. The main limitation is dustiness.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

GcC—Genola silt loam, moist, 2 to 5 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from sandstone, limestone, and igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 5,700 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. Below this to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 5 percent Genola, moist, 0 to 2 percent slopes; 5 percent Doyce loam, 2 to 4 percent slopes; 5 percent Wales loam, 2 to 4 percent slopes; and 5 percent Juab loam, 2 to 4 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Genola soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and nonirrigated and irrigated crops. The main nonirrigated crop is small grains, and the main irrigated crops are alfalfa hay, small grains, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Sandberg bluegrass, basin wildrye, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,100 pounds per acre

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover.

This unit is well suited to homesite and urban development. The main limitation is dustiness.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

GdDP—Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes. This very deep, somewhat excessively drained soil is on alluvial fans and lake terraces. The soil formed in windblown sand and alluvium derived dominantly from sandstone and igneous rocks. Slopes are medium in length. About 50 percent of the surface area is hummocky. Hummocks are 1 to 3 feet high. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light gray loamy fine sand about 2 inches thick. Below this to a depth of 60 inches or more is very pale brown loamy fine sand and fine sand.

Included in this unit are about 10 percent Linoyer very fine sandy loam, 2 to 5 percent slopes, and 5 percent Medburn fine sandy loam, 2 to 4 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another. Also included are small areas of a soil which is similar to this Goldrun soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Goldrun soil is rapid. Available water capacity is about 4 to 6 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are Indian ricegrass, sand dropseed, bud sagebrush, needleandthread, and basin big sagebrush. The normal expected yield of total air-dried herbage is about 800 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of rabbitbrush may develop as a result of continuous overgrazing. Brush management by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is suited to range seeding. The main limitations for seeding are the low precipitation and the sandy surface layer. Plants suitable for seeding include Indian ricegrass and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are the unstable sandy soil and the high hazard of soil blowing. Water erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit VIIs-S6, nonirrigated. The range site is Semidesert Sand.

GeD—Goldrun-Cheebe complex, 0 to 10 percent slopes. This map unit is on alluvial fans and lake terraces. Slopes are medium in length and are concave or hummocky. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 4,900 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 50 percent Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes, and 30 percent Cheebe silty clay loam. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used. The hummocks of the Goldrun soil are 1 to 3 feet high.

Included in this unit are about 10 percent Linoyer very fine sandy loam, 1 to 2 percent slopes; 5 percent Medburn fine sandy loam, 0 to 2 percent slopes; and 5 percent Genola silt loam, 1 to 2 percent slopes. All of these soils are on alluvial fans. The percentage of these included soils varies from one area to another.

The Goldrun soil is very deep and somewhat excessively drained. It formed in windblown sand and alluvium derived dominantly from sandstone and igneous rocks. Typically, the surface layer is light gray loamy fine sand about 2 inches thick. Below this to a depth of 60 inches or more is very pale brown loamy fine sand.

Permeability of the Goldrun soil is rapid. Available water capacity is about 4 to 6 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

The Cheebe soil is very deep and well drained. It formed in lake sediment derived dominantly from limestone, sandstone, and shale. Typically, the surface layer is light brownish gray silty clay loam about 8 inches thick. The subsoil is very strongly alkaline and very strongly calcareous, light gray silty clay about 28 inches thick. The substratum is white silty clay loam to a depth of 60 inches or more.

Permeability of the Cheebe soil is slow. Available water capacity is about 6 to 10 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is ponded, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Goldrun soil is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are Indian ricegrass, sand dropseed, bud sagebrush, needleandthread, and basin big sagebrush. The normal expected yield of total air-dried herbage is about 800 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of rabbitbrush may develop as a result of continuous overgrazing. Brush management by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This soil is suited to range seeding. The main limitations are low precipitation and the sandy surface layer. Plants suitable for seeding include Indian ricegrass and species of the potential plant community for which seed or stock is available.

The potential plant community on the Cheebe soil is about 40 percent perennial grasses, 5 percent forbs, and

55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing. Brush management by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This soil is poorly suited to range seeding. The main limitations are the content of salt and alkali and low precipitation. Plants suitable for seeding include Indian ricegrass and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential of the Cheebe soil and the sandy, unstable texture and the hazard of soil blowing of the Goldrun soil.

This map unit is capability unit VIIs-S6, nonirrigated. The Goldrun soil is in Semidesert Sand range site, and the Cheebe soil is in Alkali Flat range site.

GfD—Goldrun-Medburn complex, 0 to 10 percent slopes. This map unit is on alluvial fans and lake terraces. Slopes are medium in length and are convex or hummocky. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 60 percent Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes, and 25 percent Medburn fine sandy loam, 2 to 4 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used. The hummocks of the Goldrun soils are 1 to 3 feet high.

Included in this unit are about 10 percent Linoyer very fine sandy loam, 2 to 5 percent slopes, and 5 percent Genola silt loam, 2 to 5 percent slopes, on alluvial fans. The percentage of included soils varies from one area to another.

The Goldrun soil is very deep and somewhat excessively drained. It formed in windblown sand and alluvium derived dominantly from sandstone and igneous rocks. Typically, the surface layer is light gray loamy fine sand about 2 inches thick. Below this to a depth of 60 inches or more is very pale brown loamy fine sand and fine sand.

Permeability of the Goldrun soil is rapid. Available water capacity is about 4 to 6 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

The Medburn soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone and igneous rocks. Typically, the surface layer is pale brown fine sandy loam about 8 inches thick. The upper 24 inches of the underlying material is very pale brown fine sandy loam. The lower part is very pale brown fine sandy loam and gravelly sandy loam to a depth of 60 or more inches.

Permeability of the Medburn soil is moderately rapid. Available water capacity is about 5 to 7 inches. Water supplying capacity is 5 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Goldrun soil is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are Indian ricegrass, basin big sagebush, sand dropseed, bud sagebrush, and needleandthread. The normal expected yield of total air-dried herbage is about 800 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Goldrun soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of rabbitbrush may develop as a result of continuous overgrazing. Brush management by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

The Goldrun soil is suited to range seeding. The main limitations are low precipitation and the sandy surface layer. Plants suitable for seeding include Indian ricegrass and species of the potential plant community for which seed or stock is available.

The potential plant community on the Medburn soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are Indian ricegrass, Wyoming big sagebrush, needleandthread, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Medburn soil include proper grazing use, proper seasonal use, good distribution of water, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

The Medburn soil is well suited to range seeding where precipitation is more than 10 inches. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are the unstable sandy texture and the hazard of soil blowing of the Goldrun soil.

This map unit is in capability unit VIIs-S6, nonirrigated. The Goldrun soil is in Semidesert Sandy range site, and the Medburn soil is in Semidesert Sandy Loam range site.

GgD—Goldrun-Rock outcrop complex, 0 to 10 percent slopes. This map unit is on alluvial fans and hillsides. Slopes are short and hummocky. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,900 to 5,300 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 50 percent Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes, and 25 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 15 percent Saxby very cobbly loam, 10 to 30 percent slopes, on hillsides, and 10 percent Dune land. The percentage of these inclusions varies from one area to another.

The Goldrun soil is very deep and somewhat excessively drained. It formed in windblown sand and alluvium derived dominantly from sandstone and igneous rocks. Typically, the surface layer is light gray loamy fine sand about 2 inches thick. Below this to a depth of 60 inches or more is very pale brown loamy fine sand and fine sand.

Permeability of the Goldrun soil is rapid. Available water capacity is about 4 to 6 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Goldrun soil is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are Indian ricegrass, basin big sagebrush, sand dropseed, bud sagebrush, and needleandthread. The normal expected yield of total air-dried herbage is about 800 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of rabbitbrush may develop as a result of continuous overgrazing. Brush management by chemical or mechanical treatment and proper grazing use can be used to improve deteriorated rangeland.

This soil is suited to range seeding. The main limitations are low precipitation and the sandy surface layer. Plants suitable for seeding include Indian ricegrass and species of the potential plant community for which seed or stock is available.

If this unit is used for recreational uses or homesite development, the main limitations are steepness of slope, Rock outcrop, and the unstable sandy texture in the Goldrun soils.

This map unit is in capability unit VIIs-S6, nonirrigated. The range site is Semidesert Sand.

HaF—Hamtah loam, 30 to 70 percent slopes. This very deep, well drained soil is on mountainsides. It formed in colluvium derived dominantly from sandstone, quartzite, shale, and limestone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,300 to 8,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

Typically, the surface layer is very dark grayish brown loam about 8 inches thick over very dark grayish brown cobbly loam about 12 inches thick. The subsoil is brown very cobbly clay loam about 8 inches thick over yellowish brown very gravelly and very cobbly clay to depth of 60 inches or more.

Included in this unit are about 5 percent Flygare gravelly loam, 30 to 70 percent slopes, and 5 percent Parkay very stony loam, 30 to 70 percent slopes, on mountainsides. Yeates Hollow stony loam, 25 to 40 percent slopes, on alluvial fans, makes up 5 percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Hamtah soil is slow. Available water capacity is about 5 to 8 inches. Water supplying capacity is 10 to 16 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is rapid, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are slender wheatgrass, Gambel oak, bearded wheatgrass, Utah snowberry, and bigtooth maple. The normal expected yield of total air-dried herbage is about 1,800 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good distribution of water, and a planned grazing system. Slope limits access by livestock and results in overgrazing of the less sloping areas. Dense stands of bigtooth maple may develop as a result of continuous overgrazing.

This unit is poorly suited to range seeding. The main limitation is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitation is steepness of slope.

This map unit is in capability unit VIIe-MQ, nonirrigated. The range site is Mountain Loam (Shrub).

HbA—Hansel silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from igneous rocks. Slopes are short and convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,400 to 5,700 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light yellowish brown silt loam about 6 inches thick. The subsoil is light yellowish brown silt loam about 15 inches thick. The substratum is white silt loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Genola silt loam, moist, 1 to 2 percent slopes; 5 percent Doyce loam, 2 to 4 percent slopes; 5 percent Hansel silt loam, 2 to 4 percent slopes; and 5 percent Wales loam, 2 to 4 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Hansel soil is moderately slow. Available water capacity is about 9 to 10 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for nonirrigated small grains, the main limitation is the low water supplying capacity. A two-year fallow rotation is most suitable.

This unit is moderately suited to recreational uses and homesite development. The main limitations are shrink-swell potential and dustiness. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IVc-U, nonirrigated. The range site is Upland Loam.

HbB—Hansel silt loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from igneous rocks. Slopes are short and convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,400 to 5,700 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light yellowish brown silt loam about 6 inches thick. The subsoil is yellowish brown silt loam about 15 inches thick. The substratum is white silt loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Genola silt loam, moist, 2 to 5 percent slopes; 5 percent Doyce loam, 2 to 4 percent slopes; 5 percent Hansel silt loam, 0 to 2 percent slopes; and 5 percent Wales loam, 2 to 4 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Hansel soil is moderately slow. Available water capacity is about 9 to 10 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for nonirrigated small grains, the main limitation is the low water supplying capacity. A two-year fallow rotation is most suitable.

This unit is moderately suited to recreational uses and homesite development. The main limitations are shrink-swell potential and dustiness. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IVe-U, nonirrigated. The range site is Upland Loam.

Hc—Harding silt loam. This very deep, well drained soil is on lake terraces and flood plains. The soil formed in lake sediment and alluvium derived dominantly from mixed sedimentary rocks. Slopes are 0 to 4 percent and are concave or convex. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,500 to 5,100 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown silt loam about 4 inches thick. The subsoil is moderately saline to very strongly saline, pale brown silty clay about 26 inches thick. It is strongly alkaline to very strongly alkaline. The substratum is strongly saline to very strongly saline, pale brown silty clay or silt loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Genola silt loam, 1 to 2 percent slopes, and 5 percent Mellor silt loam, 0 to 2 percent slopes, on alluvial fans. Manassa silt loam, 0 to 2 percent slopes, on alluvial plains, makes up 5 percent of the map unit. The percentage of the included soils varies from one area to another.

Permeability of this Harding soil is slow. Available water capacity is about 4 to 8 inches. Water supplying capacity is 3 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing. Brush management by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is poorly suited to range seeding. The main limitations are content of salt and alkali. Plants suitable for seeding include Indian ricegrass and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to recreational uses and homesite development. The main limitations are shrink-swell potential, slow permeability, and a high content of salt and alkali in the soil.

This map unit is in capability unit VIIs-S8, nonirrigated. The range site is Alkali Flat.

HdC—Hiko Peak stony sandy loam, 4 to 8 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,800 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown stony sandy loam about 7 inches thick. The subsoil is light yellowish brown gravelly sandy loam about 12 inches thick. The substratum is very pale brown very gravelly sandy loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Sanpete gravelly fine sandy loam, 4 to 15 percent slopes; 5 percent Medburn fine sandy loam, 2 to 4 percent slopes; 5 percent Spager gravelly loam, 4 to 15 percent slopes; and 5 percent Hiko Peak stony sandy loam, 8 to 15 percent slopes. These soils are on alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Hiko Peak soil is moderately rapid. Available water capacity is about 3.5 to 4.5 inches. Water supplying capacity is 5 to 6.5 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are Wyoming big sagebrush, shadscale, Indian ricegrass, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is suited to range seeding. The main limitations are low precipitation and the content of rock fragments. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, and species of the

potential plant community for which seed or stock is available.

This unit is moderately suited to recreational uses and homesite development. The main limitations are stoniness and shrink-swell potential.

This map unit is in capability unit VIIs-SX, nonirrigated. The range site is Semidesert Stony Loam.

HdD—Hiko Peak stony sandy loam, 8 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,800 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown stony sandy loam about 7 inches thick. The subsoil is light yellowish brown gravelly sandy loam about 12 inches thick. The substratum is very pale brown very gravelly sandy loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Sanpete gravelly fine sandy loam, 4 to 15 percent slopes; 5 percent Medburn fine sandy loam, 2 to 4 percent slopes; 5 percent Spager gravelly loam, 4 to 15 percent slopes; and 5 percent Hiko Peak stony sandy loam, 4 to 8 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Hiko Peak soil is moderately rapid. Available water capacity is about 3.5 to 4.5 inches. Water supplying capacity is 5 to 6.5 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are Wyoming big sagebrush, shadscale, Indian ricegrass, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. The main limitations are low precipitation, the content of rock fragments, and slope. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is moderately suited to recreational uses and homesite development. The main limitations are stoniness, shrink-swell potential, and slope.

This map unit is in capability unit VIIs-SX, nonirrigated. The range site is Semidesert Stony Loam.

HdE—Hiko Peak stony sandy loam, 15 to 25 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,800 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown stony sandy loam about 7 inches thick. The subsoil is light yellowish brown gravelly sandy loam about 12 inches thick. The substratum is very pale brown very gravelly sandy loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Sanpete gravelly fine sandy loam, 15 to 40 percent slopes; 5 percent Medburn fine sandy loam, 2 to 4 percent slopes; 5 percent Spager gravelly loam, 4 to 15 percent slopes; and 5 percent Hiko Peak stony sandy loam, 8 to 15 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Hiko Peak soil is moderately rapid. Available water capacity is about 3.5 to 4.5 inches. Water supplying capacity is 5 to 6.5 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife nabitat.

The potential plant community on this soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are Wyoming big sagebrush, shadscale, Indian ricegrass, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is very poorly suited to seeding. The main limitations are low precipitation, slope, and the content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. The main limitation is steepness of slope.

This map unit is in capability unit VIIs-SX, nonirrigated. The range site is Semidesert Stony Loam.

HeC—Hillfield silt loam, 2 to 5 percent slopes. This very deep, well drained soil is on lake terraces. It is near the town of Santaquin. It formed in lake sediment derived dominantly from sedimentary rocks. Slopes are short and convex. Elevation is 5,000 to 5,200 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is light grayish brown silt loam about 5 inches thick. Below this to a depth of 60 inches or more is light brownish gray, stratified very fine sandy loam and silt loam.

Included in this unit are about 5 percent Dagor loam, 2 to 8 percent slopes, and 5 percent Parleys loam, 2 to 4 percent slopes, on alluvial fans, and 5 percent Taylorsville silt loam, 2 to 4 percent slopes, on lake terraces. Five percent of the map unit is a Hillfield silt loam that is slightly steeper and is on lake terraces. The percentage of included soils varies from one area to another.

Permeability of this Hillfield soil is moderately slow. Available water capacity is about 9 to 11 inches. Water supplying capacity is 11 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used for nonirrigated small grains.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IIIe-U, nonirrigated.

HfC—Hupp gravelly loam, 4 to 8 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from quartzite, limestone, and sandstone. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown gravelly loam about 14 inches thick. The subsoil is brown very gravelly loam about 7 inches thick. The substratum is pale brown very gravelly loam and yellowish brown very cobbly loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Hupp gravelly loam, 8 to 15 percent slopes; 5 percent Parleys loam, 4 to 8 percent slopes; and 5 percent Dry Creek cobbly loam, 4 to 15 percent slopes, on alluvial fans. Taylorsville silt loam, 4 to 8 percent slopes, on lake terraces, also makes up 5 percent of the unit. The percentage of the included soils varies from one area to another.

Permeability of this Hupp soil is moderately rapid. Available water capacity is about 4 to 6 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 3 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, needleandthread, and muttongrass. The normal expected yield of total air-dried herbage is about 900 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing.

This unit is suited to range seeding. The main limitation is the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is moderately suited to recreational uses and homesite development. The main limitation is stoniness and slope. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IVs-U4, nonirrigated. The range site is Upland Gravelly Loam.

HfD—Hupp gravelly loam, 8 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from quartzite, limestone, and sandstone. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown gravelly loam about 14 inches thick. The subsoil is brown very gravelly loam about 7 inches thick. The substratum is pale brown very gravelly loam and yellowish brown very cobbly loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Hupp gravelly loam, 4 to 8 percent slopes; 5 percent Parleys loam, 4 to 8 percent slopes; and 5 percent Dry Creek cobbly loam, 4 to 15 percent slopes, on alluvial fans. Taylorsville silt loam, 4 to 8 percent slopes, on lake terraces, makes up 5 percent of the unit.

Permeability of this Hupp soil is moderately rapid. Available water capacity is about 4 to 6 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 3 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, needleandthread, and muttongrass. The normal expected yield of total air-dried herbage is about 900 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing.

This unit is suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is moderately suited to recreational uses and homesite development. The main limitations are stoniness and slope. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IVs-U4, nonirrigated. The range site is Upland Gravelly Loam.

JaD—Jericho gravelly fine sandy loam, 4 to 15 percent slopes. This shallow, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from igneous rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly junipers, grasses, and shrubs. Elevation is 4,600 to 5,800 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown gravelly fine sandy loam about 5 inches thick. The subsoil is light yellowish brown gravelly fine sandy loam about 4 inches thick. The substratum is very pale brown very gravelly fine sandy loam about 10 inches thick. A silica and carbonate cemented hardpan, 11 inches thick, is at a depth of 19 inches. Depth to the hardpan ranges from 10 to 20 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loamy sand and cemented hardpan (fig. 9).

Included in this unit are about 10 percent Spager gravelly loam, 4 to 15 percent slopes; 5 percent

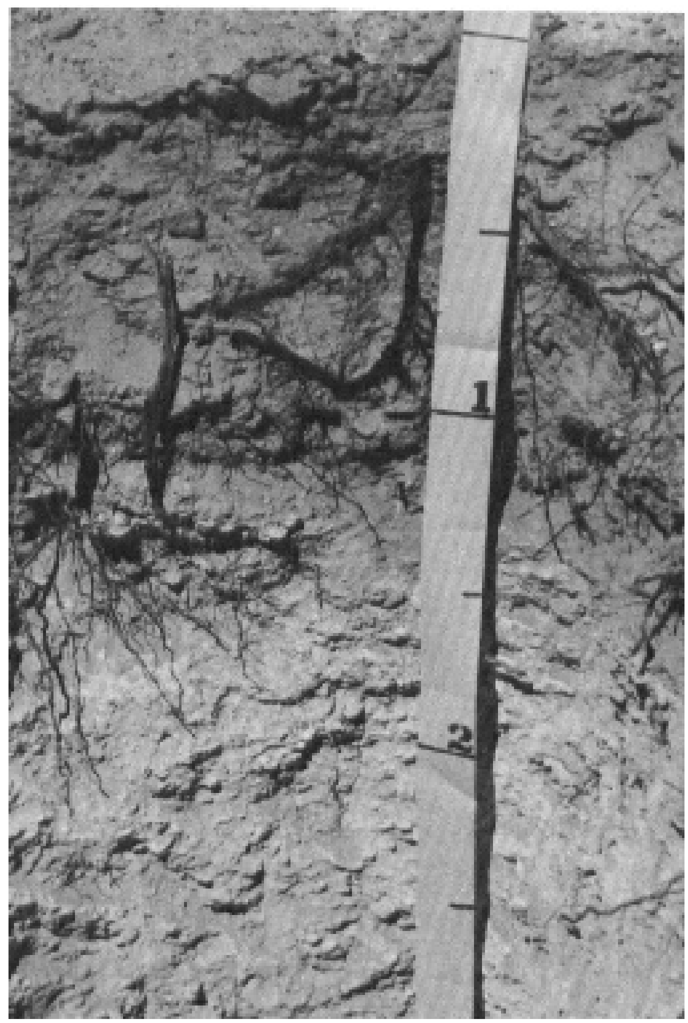


Figure 9.—A silica and carbonate cemented hardpan, 11 inches thick, in Jericho gravelly fine sandy loam, 4 to 15 percent slopes.

Medburn fine sandy loam, 2 to 4 percent slopes; 5 percent Shabliss very fine sandy loam, 2 to 5 percent slopes; and 5 percent Truesdale fine sandy loam, 2 to 4 percent slopes. All of these soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Jericho soil is moderately rapid. Available water capacity is about 1 to 2 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are Indian ricegrass, Utah juniper, bluebunch wheatgrass, and black sagebrush. The normal expected yield of total air-dried herbage is about 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation is the depth to hardpan.

If this unit is used for recreational uses or homesite development, the main limitations are shallow depth to the hardpan and small stones.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam (Juniper).

JbA—Juab loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium derived dominantly from sedimentary and igneous rocks. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,550 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 13 inches thick. Below this to a depth of 60 inches or more is pale brown loam or silt loam.

Included in this unit are about 5 percent Juab loam, 2 to 4 percent slopes; 5 percent Juab loam, gravelly substratum, 2 to 4 percent slopes; 5 percent Wales loam, 2 to 4 percent slopes; and 5 percent Musinia silt loam, 0 to 2 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Juab soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 8.5 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and irrigated and nonirrigated crops. The main irrigated crops are alfalfa hay, small grains, and corn used for silage. The main nonirrigated crop is small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a two-year fallow rotation is most suitable. This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover.

This map unit is in capability units IIc-2, irrigated, and IVc-U, nonirrigated. The range site is Upland Loam.

JbB—Juab loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium derived dominantly from sedimentary and igneous rocks. Slopes are long and are convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,550 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 13 inches thick. Below this to a depth of 60 inches or more is pale brown loam or silt loam.

Included in this unit are about 5 percent Juab loam, 0 to 2 percent slopes; 5 percent Juab loam, gravelly

substratum, 2 to 4 percent slopes; 5 percent Wales loam, 2 to 4 percent slopes; and 5 percent Musinia silt loam, 2 to 5 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Juab soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 8.5 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and irrigated and nonirrigated crops. The main irrigated crops are alfalfa hay, small grains, and corn used for silage. The main nonirrigated crop is small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use, can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a two-year fallow rotation is most suitable. The unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

JbC—Juab loam, 4 to 8 percent slopes. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium derived dominantly from sedimentary and igneous rocks. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,550 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 13 inches thick. Below this to a depth of 60 inches or more is pale brown loam or silt loam.

Included in this unit are about 5 percent Juab loam, 2 to 4 percent slopes; 5 percent Juab loam, gravelly substratum, 4 to 8 percent slopes; 5 percent Wales loam, 2 to 4 percent slopes; and 5 percent Donnardo stony loam, 2 to 8 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Juab soil is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 8.5 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and irrigated and nonirrigated crops. The main irrigated crops are alfalfa hay, small grains, and corn used for silage. The main nonirrigated crop is small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a two-year fallow rotation is most suitable. This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the

surface reduces runoff, and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

JcB—Juab loam, gravelly substratum, 2 to 4 percent slopes.

JcC—Juab loam, gravelly substratum, 4 to 8 percent slopes. These very deep, well drained soils on alluvial fans and lake terraces. They are formed in alluvium derived dominantly from sedimentary and igneous rocks. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown loam about 13 inches thick. The upper 16 inches of the underlying material is yellowish brown loam. The next 11 inches is reddish yellow gravelly loam. Below this to a depth of 60 inches or more is light brown very gravelly fine sandy loam.

Included in this unit are about 5 percent Juab loam, 4 to 8 percent slopes; 5 percent Wales loam, 2 to 4 percent slopes; and 5 percent Donnardo stony loam, 2 to 8 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of these Juab soils is moderate. Available water capacity is about 6 to 7.5 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

These units are used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay and small grains.

The potential plant community on these soils is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can be used to improve deteriorated rangeland.

These units are well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, and antelope bitterbrush.

These units are well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

These units are well suited to recreational uses and homesite development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

Map unit JcB is in capability units IIe-2, irrigated, and VIe-U, nonirrigated; map unit JcC is in capability units IIIe-2, irrigated, and VI3-U, nonirrigated. The range site for both units is Upland Loam.

JdC—Juab complex, 4 to 8 percent slopes. This map unit is on alluvial fans and lake terraces. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,550 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 50 percent Juab loam and 40 percent Juab loam, gravelly substratum. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Donnardo stony loam, 2 to 8 percent slopes, on the higher parts of alluvial fans, and 5 percent Wales loam, 2 to 4 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Juab loam is very deep and well drained. It formed in alluvium derived dominantly from sedimentary rocks. Typically, the surface layer is brown loam about 13 inches thick. Below this to a depth of 60 inches or more is pale brown loam or silt loam.

Permeability of the Juab loam is moderate. Available water capacity is about 9 to 11 inches. Water supplying capacity is 8.5 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

The Juab loam, gravelly substratum, is very deep and well drained. It formed in alluvium derived dominantly from sedimentary rocks. Typically, the surface layer is brown loam about 13 inches thick. The upper 16 inches

of the underlying material is yellowish brown loam. The next 11 inches is reddish yellow gravelly loam. Below this to a depth of 60 inches or more is light brown very gravelly fine sandy loam.

Permeability of the Juab loam, gravelly substratum, is moderate. Available water capacity is about 6 to 7.5 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main crops are alfalfa hay and small grains.

The potential plant community on these soils is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to the unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff, soil blowing, and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IIIe-2, irrigated, and IVe-U, nonirrigated. Both soils are in the Upland Loam range site.

JeD—Justesen loam, 4 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from igneous rocks. Slopes are medium in length and are convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,600 to 6,600 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is brown loam about 14 inches thick. The subsoil is yellowish brown silty clay loam about 20 inches thick. The upper 17 inches of the underlying material is light yellowish brown silty clay loam. Below this to a depth of 60 inches or more is white loam.

Included in this unit are about 5 percent Borvant cobbly loam, 2 to 8 percent slopes, and 5 percent Donnardo stony loam, 2 to 8 percent slopes, on alluvial fans. Sumine very cobbly loam, 10 to 30 percent slopes, on hillsides, also makes up 5 percent of the unit. The percentage of included soils varies from one area to another.

Permeability of this Justesen soil is moderately slow. Available water capacity is about 7.5 to 11 inches. Water supplying capacity is 9 to 11.5 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, nonirrigated pasture, and nonirrigated crops. The main nonirrigated crop is small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is suited to range seeding. The main limitation is slope. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is moderately suited to recreational uses and homesite development. The main limitations are shrink-swell potential and slope. Erosion and sedimentation can

be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IVe-U5, nonirrigated. The range site is Upland Loam.

KaB—Keigley silt loam, dry, 0 to 2 percent slopes. This very deep, well drained soil is on lake terraces and alluvial fans. The soil formed in alluvium and lake sediment derived dominantly from mixed sedimentary rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,600 to 5,300 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown silt loam in the upper 8 inches and brown silty clay loam in the lower 16 inches. The underlying material is pale brown silty clay loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Birdow loam and 5 percent Wales loam, 2 to 4 percent slopes, on alluvial fans. The percent of these included soils varies from one area to another.

Permeability of this Keigley soil is moderately slow. Available water capacity is about 10 to 11.5 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 3 to 5 percent. Runoff is moderate, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main crops are alfalfa hay, barley, wheat, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, needleandthread, Indian ricegrass, basin big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, and antelope bitterbrush.

This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to the unit. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is suited to recreational uses and homesite development. The main limitations are shrink-swell potential and moderately slow permeability. Erosion and sedimentation can be controlled and the beauty of the area enhanced by maintaining adequate plant cover. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and IV3-U, nonirrigated. The range site is Upland Loam.

Kb—Kirkham silt loam. This very deep, somewhat poorly drained soil is on alluvial plains and valley bottoms. It formed in alluvium and lake sediment derived dominantly from sedimentary rocks. Slopes are 0 to 2 percent, are short to medium in length, and are convex or concave. The native vegetation is mainly grasses. Elevation is 4,500 to 5,100 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown silt loam about 13 inches thick. The upper 27 inches of the underlying material is pale brown silty clay loam and silt loam. The lower part is pale brown silty clay to a depth of 60 inches or more. This soil is slightly affected by salt.

Included in this unit are about 5 percent Benjamin silty clay loam and 5 percent Benjamin silty clay loam, moderately saline-alkali, on flood plains. Juab loam, 0 to 2 percent slopes, on alluvial fans, makes up 5 percent of this unit. The percentage of included soils varies from one area to another.

Permeability of this Kirkham soil is moderately slow. Available water capacity is about 9 to 10.5 inches. Water supplying capacity is 8 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight. This soil is subject to rare periods of flooding. A high water table is at a depth of 2.5 to 4.5 feet, mainly from May to August.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, wheat, barley, and corn used for silage.

The potential plant community on this soil is about 80 percent perennial grasses, 12 percent forbs, and 8 percent shrubs. Important plant species are sedges, western wheatgrass, mountain brome, basin wildrye, and tufted hairgrass. The normal expected yield of total air-dried herbage is about 2,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned

grazing system. Dense stands of sedge may develop as a result of continuous overgrazing.

This unit is suited to range seeding. The main limitation is a high water table. Plants suitable for seeding include sweetvetch, alfalfa, intermediate wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is moderately suited to irrigated crops. The main limitation is the content of salt in the soil. Furrow, border, corrugation, and sprinkler irrigation systems are suited to the unit. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps to maintain soil tilth and organic matter content.

This unit is poorly suited to recreational uses and homesite development. The main limitations are wetness and the hazard of flooding.

This map unit is in capability units IIw-27, irrigated, and IVw-27, nonirrigated. The range site is Semi-Wet Meadow.

KcF—Kitchell-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are long and convex. In most areas the present vegetation is mainly fir trees and grasses. Elevation is 6,000 to 7,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

This unit is about 55 percent Kitchell cobbly loam, 30 to 70 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 15 percent Starley very cobbly loam, 30 to 70 percent slopes, and 5 percent Agassiz very stony loam, 30 to 70 percent slopes, on mountainsides. Lundy very cobbly loam, 30 to 70 percent slopes, on hillsides, makes up 5 percent of the unit. The percentage of included soils varies from one area to another.

The Kitchell soil is very deep and well drained. It formed in colluvium derived dominantly from limestone, shale, and sandstone. Typically, the surface layer is very dark grayish brown cobbly loam about 10 inches thick. The next layer is very dark grayish brown very stony loam, about 13 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, brown extremely stony loam.

Permeability of the Kitchell soil is moderately rapid. Available water capacity is about 5 to 7 inches. Water supplying capacity is 8 to 13 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock.

This unit is used as woodland and for wildlife habitat.

The Kitchell soil is well suited to Douglas-fir for wood products. The main limitation is slope. Because of the steep slopes, this soil has a hazard of erosion when vegetation is removed, and the use of equipment is restricted. The yield of Douglas-fir at 100 years of age is 3,570 cubic feet per acre of trees that are 6.6 inches and more in diameter and 7,800 board feet per acre of trees that are 11.6 inches and more in diameter.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, stoniness, and areas of Rock outcrop.

This map unit is in capability unit VIIs-M, nonirrigated.

LaA—Linoyer very fine sandy loam, 0 to 1 percent slopes. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from sandstone and limestone. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,300 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very fine sandy loam about 5 inches thick. Below this to a depth of 60 inches or more is very pale brown very fine sandy loam and silt loam.

Included in this unit are about 10 percent Linoyer very fine sandy loam, 1 to 2 percent slopes; 5 percent Medburn fine sandy loam, 0 to 2 percent slopes; and 5 percent Genola silt loam, 0 to 1 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another. Also included are small areas of a soil, near the Jericho Sand Dunes, which is similar to the Linoyer soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Linoyer soil is moderate. Available water capacity is about 9 to 10.5 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, wheat, barley, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are needleandthread, Indian ricegrass, Wyoming big sagebrush, winterfat, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Sandy Loam.

LaB—Linoyer very fine sandy loam, 1 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from sandstone and limestone. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,300 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very fine sandy loam about 5 inches thick. Below this to a depth of 60 inches or more is very pale brown very fine sandy loam and silt loam.

Included in this unit are about 5 percent Linoyer very fine sandy loam, 0 to 1 percent slopes; 5 percent Linoyer very fine sandy loam, 2 to 5 percent slopes; 5 percent Medburn fine sandy loam, 0 to 2 percent slopes; and 5 percent Genola silt loam, 0 to 1 percent slopes. These soils are on alluvial fans. The percentage of the included soils varies from one area to another. Also included are small areas of a soil, near the Jericho Sand Dunes, which is similar to the Linoyer soil except it receives 8 to 10 inches of precipitation annually.

Permeability in this Linoyer soil is moderate. Available water capacity is about 9 to 10.5 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, wheat, barley, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are needleandthread, Indian ricegrass, Wyoming big sagebrush, winterfat, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Sandy Loam.

LaC—Linoyer very fine sandy loam, 2 to 5 percent slopes. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from sandstone and limestone. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,300 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very fine sandy loam about 5 inches thick. Below this to a depth of 60 inches or more is very pale brown very fine sandy loam and silt loam.

Included in this unit are about 5 percent Linoyer very fine sandy loam, 1 to 2 percent slopes; 5 percent Linoyer very fine sandy loam, 5 to 10 percent slopes; 5 percent Medburn fine sandy loam, 2 to 4 percent slopes; and 5 percent Genola silt loam, 2 to 5 percent slopes. These

soils are on alluvial fans. The percentage of these included soils varies from one area to another. Also included are some small areas of a soil, north of Elberta and near the Jericho Sand Dunes and the Sevier Bridge Reservoir, which is similar to the Linoyer soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Linoyer soil is moderate. Available water capacity is about 9 to 10.5 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The irrigated crops are mainly alfalfa hay, wheat, barley, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are needleandthread, Indian ricegrass, Wyoming big sagebrush, winterfat, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Sandy Loam.

LaD2—Linoyer very fine sandy loam, 5 to 10 percent slopes, eroded. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from sandstone and limestone. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,300 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very fine sandy loam about 2 inches thick. Below this to a depth of 60 inches or more is very pale brown very fine sandy loam and silt loam.

Included in this unit are about 5 percent Linoyer very fine sandy loam, 2 to 5 percent slopes; 5 percent Medburn fine sandy loam, 2 to 4 percent slopes; and 5 percent Genola silt loam, 2 to 5 percent slopes, on alluvial fans. Ten percent of the map unit is a soil that is moderately affected by gypsum. This soil is in areas near Elberta on low lake terraces in the Goshen Valley. The percentage of these included soils varies from one area to another. Also included is a small amount of a soil, near the Jericho Sand Dunes, which is similar to this Linoyer soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Linoyer soil is moderate. Available water capacity is about 9 to 10.5 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is high.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, wheat, barley, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are needleandthread, Indian ricegrass, Wyoming big sagebrush, winterfat, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development.

This map unit is in capability units IVe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Sandy Loam.

LbE—Lizzant very cobbly loam, 8 to 30 percent slopes. This very deep, well drained soil is on mountainsides, hillsides, and alluvial fans. The soil formed in alluvium and colluvium derived dominantly from limestone. Slopes are long and convex. In most areas the present vegetation is mainly shrubs and grasses. Elevation is 5,500 to 7,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is brown very cobbly loam about 9 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, pale brown very cobbly loam.

Included in this unit are about 5 percent Rock outcrop and 5 percent Lizzant very cobbly loam, 30 to 60 percent slopes; 7 percent Bezzant gravelly loam, 6 to 30 percent slopes; and 3 percent Lundy very cobbly loam, 30 to 70 percent slopes; on mountainsides. Borvant cobbly loam, 2 to 8 percent slopes, on alluvial fans, also makes up 5 percent of this unit. The percentage of these inclusions varies from one area to another.

Permeability of this Lizzant soil is moderate. Available water capacity is about 5.5 to 7 inches. Water supplying capacity is 8 to 10 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bearded wheatgrass, mountain brome, Gambel oak, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,900 pounds per acre.

Dense stands of Gambel oak may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is well suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness and slope.

This map unit is in capability unit VIs-MXQ, nonirrigated. The range site is Mountain Gravelly Loam (Oak).

LbF—Lizzant very cobbly loam, 30 to 60 percent slopes. This very deep, well drained soil is on mountainsides, hillsides, and alluvial fans. The soil formed in alluvium and colluvium derived dominantly from limestone. Slopes are long and convex. In most areas the present vegetation is mainly shrubs and grasses. Elevation is 5,500 to 7,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is brown very cobbly loam about 9 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, pale brown very cobbly loam.

Included in this unit are about 5 percent Rock outcrop and 5 percent Lizzant very cobbly loam, 8 to 30 percent slopes; 7 percent Bezzant gravelly loam, 30 to 60 percent slopes; and 3 percent Lundy very cobbly loam, 30 to 70 percent slopes, on hillsides. Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans, also makes up 5 percent of this unit. The percentage of these inclusions varies from one area to another.

Permeability of this Lizzant soil is moderate. Available water capacity is about 5.5 to 7 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bearded wheatgrass, mountain brome, Gambel oak, and basin big sagebrush. The normal expected yield of total air-dried herbage is about 1,900 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas. Dense stands of big sagebrush may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitations are slope and the content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness and slope.

This map unit is in capability unit VIIs-MXQ, nonirrigated. The range site is Mountain Gravelly Loam (Oak).

LcF—Lizzant very cobbly loam, dry, 30 to 60 percent slopes. This very deep, well drained soil is on hillsides and fans. The soil formed in alluvium and colluvium derived dominantly from limestone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,500 to 6,000 feet. The average annual precipitation is 14 to 16 inches,

the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is brown cobbly loam about 9 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, pale brown very cobbly loam.

Included in this unit are about 5 percent Rock outcrop and 5 percent Bezzant gravelly loam, 6 to 30 percent slopes; 5 percent Lizzant very cobbly loam, 30 to 60 percent slopes; and 2 percent Lodar very cobbly loam, 3 to 30 percent slopes, on hillsides. Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans, also makes up 5 percent of the unit. The percentage of these inclusions varies from one area to another.

Permeability of this Lizzant soil is moderate. Available water capacity is about 5.5 to 7 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, antelope bitterbrush, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 900 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas.

This unit is very poorly suited to range seeding. The main limitations of the soil are slope and the content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness and slope.

This map unit is in capability unit VIIs-UX, nonirrigated. The range site is Upland Stony Loam.

LdE—Lodar-Rock outcrop complex, 3 to 30 percent slopes. This map unit is on hillsides. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 60 percent Lodar very cobbly loam, 3 to 30 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Lodar very cobbly loam, 30 to 70 percent slopes, on hillsides, and 5 percent Borvant cobbly loam, 8 to 25 percent slopes, and 5 percent Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans. The percentage of the included soils varies from one area to another.

The Lodar soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, the surface layer is grayish brown very cobbly loam about 10 inches thick. The underlying material is pale brown very stony loam about 5 inches thick. Limestone is at a depth of 15 inches. Depth to limestone ranges from 10 to 20 inches.

Permeability of the Lodar soil is moderate. Available water capacity is about 1 inch to 1.5 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Lodar soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitation is depth to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope, stoniness, shallow depth to bedrock, and Rock outcrop.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow loam.

LdF—Lodar-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on hillsides. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 60 percent Lodar very cobbly loam, 30 to 70 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Lodar very cobbly loam, 3 to 30 percent slopes, on hillsides, and 5 percent Borvant cobbly loam, 8 to 25 percent slopes, and 5 percent Donnardo stony loam, 8 to 25 percent

slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Lodar soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, the surface layer is grayish brown very cobbly loam about 10 inches thick. The underlying material is pale brown very stony loam about 5 inches thick. Limestone is at a depth of 15 inches. Depth to limestone bedrock ranges from 10 to 20 inches.

Permeability of the Lodar soil is moderate. Available water capacity is about 1 to 1.5 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Lodar soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Because of the steepness of slope and the shallow depth of soil, grazing management practices are poorly suited to this unit.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, stoniness, shallow depth to bedrock, and Rock outcrop.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

LeF—Lundy-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on mountainsides and hillsides. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,600 to 8,100 feet. The average annual precipitation is 14 to 18 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 60 percent Lundy very cobbly loam, 30 to 70 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Atepic shaly loam, 10 to 40 percent slopes; 5 percent Lizzant very cobbly loam, 8 to 30 percent slopes; and 5 percent Lodar very cobbly loam, 30 to 70 percent slopes, on hillsides. Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans, also makes up five percent of this unit. The percentage of these included soils varies from one area to another.

The Lundy soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone and sandstone. Typically, the surface layer is dark brown very cobbly loam about 6 inches thick. The underlying material is pale brown and brown very cobbly loam about 13 inches thick. Limestone is at a depth of 19 inches. Depth to limestone ranges from 10 to 20 inches.

Permeability of the Lundy soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat (fig. 10).

The potential plant community on the Lundy soil is about 65 percent perennial grasses, 3 percent forbs, 7 percent shrubs, and 25 percent trees. Important plant species are bluebunch wheatgrass, Utah juniper, Indian ricegrass, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Because of the steepness of slopes and shallow depth to bedrock, grazing management practices are poorly suited to this unit.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope, stoniness, shallow depth to bedrock, and Rock outcrop.

This map unit is in capability unit VIIs-U3J, nonirrigated. The range site is Upland Shallow Loam (Juniper).

MaB—Manassa silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from shale, limestone, and sandstone. Slopes are long and convex or concave. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is saline, pale brown silt loam about 15 inches thick. Below this to a depth of 60 inches or more is very strongly saline, very pale brown silty clay loam.

Included in this unit are about 5 percent Manassa silt loam, 2 to 5 percent slopes, eroded, on alluvial plains, and 5 percent Woodrow silt loam, 1 to 2 percent slopes, on lake plains. Three percent of the map unit is Mellor silt loam, 0 to 2 percent slopes, and 2 percent is Harding silt loam. Both soils are on lake terraces. The percentage of these included soils varies from one area to another.



Figure 10.—Grazing management is difficult on the Lundy-Rock outcrop complex, 30 to 70 percent slopes, because of the steep slope and shallow depth to bedrock.

Permeability of this Manassa soil is slow. Available water capacity is about 3 to 6 inches. Water supplying capacity is 3 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0 to 0.5 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as the result of continuous overgrazing.

This unit is poorly suited to range seeding. The main limitation is the content of salt and alkali.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitation is the content of salt and alkali in the soil.

This unit is poorly suited to recreational uses and homesite development. The main limitations of the soil are shrink-swell potential, slow permeability, and the content of salt and alkali.

This map unit is in capability unit VIIs-S8, nonirrigated. The range site is Alkali Flat.

MbC2—Manassa silt loam, 2 to 5 percent slopes, eroded. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from shale, limestone, and sandstone. Slopes are long and convex or concave. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is saline, pale brown silt loam about 5 inches thick. Below this to a depth of 60 inches or more is very strongly saline, very pale brown silty clay loam.

Included in this unit are about 5 percent Manassa silt loam, 0 to 2 percent slopes, on alluvial plains, and 5 percent Woodrow silt loam, 2 to 5 percent slopes, on lake plains. Three percent of the map unit is Mellor silt loam, 0 to 2 percent slopes, and 2 percent is Harding silt loam. Both soils are on lake terraces. The percentage of these included soils varies from one area to another.

Permeability of this Manassa soil is slow. Available water capacity is about 3 to 6 inches. Water supplying capacity is 3 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0 to 0.5 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing.

This unit is poorly suited to range seeding. The main limitation of the soil is the content of salt and alkali.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitation is the content of salt and alkali in the soil.

This unit is poorly suited to recreational and homesite development. The main limitations are shrink-swell potential, slow permeability, and the content of salt and alkali in the soil.

This map unit is in capability unit VIIs-S8, nonirrigated. The range site is Alkali Flat.

McB—Manassa silt loam, moderately saline, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from shale, limestone, and sandstone. Slopes are long and convex or concave. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is slightly saline, pale brown silt loam about 15 inches thick. Below this to a depth of 60 inches or more is moderately saline, very pale brown silty clay loam.

Included in this unit are about 8 percent Manassa silt loam, 0 to 2 percent slopes, and 2 percent Wales loam, 2 to 4 percent slopes, on alluvial fans; 5 percent Mellor silt loam, 0 to 2 percent slopes, on lake terraces; and 5 percent Woodrow silt loam, 1 to 2 percent slopes, on lake plains. The percentage of these included soils varies from one area to another.

Permeability of this Manassa soil is slow. Available water capacity is about 4 to 6 inches. Water supplying capacity is 5 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is less than 0.5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing.

This unit is poorly suited to range seeding. The main limitation of the soil is the content of salt and alkali.

This unit is poorly suited to irrigated or nonirrigated crops. The main limitation is the content of salt and alkali in the soil.

This unit is poorly suited to recreational and homesite development. The main limitations are shrink-swell potential, slow permeability, and the content of salt and alkali.

This map unit is in capability unit VIIs-S8, nonirrigated. The range site is Alkali Flat.

MdB—Manassa-Mellor silt loams, 0 to 2 percent slopes. This map unit is on alluvial fans and lake terraces. Slopes are long and convex or concave. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,500 to 5,200 feet. The

average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F., and the average freeze-free season is 100 to 140 days.

This unit is about 50 percent Manassa silt loam, 0 to 2 percent slopes, and 40 percent Mellor silt loam, 0 to 2 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Harding silt loam, on lake terraces, and 5 percent Woodrow silt loam, 1 to 2 percent slopes, on lake plains. The percentage of these included soils varies from one area to another.

The Manassa soil is very deep and well drained. It formed in alluvium and lake sediment derived dominantly from shale, limestone, and sandstone. Typically, the surface layer is saline, pale brown silt loam about 15 inches thick. Below this to a depth of 60 inches or more is very strongly saline, very pale brown silty clay loam.

Permeability of this Manassa soil is slow. Available water capacity is about 3 to 6 inches. Water supplying capacity is 3 to 6 inches. Effective rooting depth is 6 inches or more. The organic matter content of the surface layer is less than 0.5 percent. Runoff is slow, and the hazard of water erosion is slight.

The Mellor soil is very deep and well drained. It formed in alluvium and lake sediment derived dominantly from shale, limestone, and sandstone. Typically, the surface layer is saline, light brownish gray silt loam about 7 inches thick. The subsoil is pale brown silty clay loam about 13 inches thick. It is strongly to very strongly affected by salt and alkali. The substratum is very strongly saline, pale brown silty clay loam to a depth of 60 inches.

Permeability of the Mellor soil is slow. Available water capacity is about 1.5 to 4 inches. Water supplying capacity is 3 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on these soils is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing.

This unit is poorly suited to range seeding. The main limitation is the content of salt and alkali.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitation is the content of salt and alkali in the soil.

This unit is poorly suited to recreational uses and homesite development. The main limitations are shrink-swell potential, slow permeabiltiy, and the content of salt and alkali in the soil.

This map unit is in capability unit VIIs-S8, nonirrigated. Both of these soils are in the Alkali Flat range site.

MeC—Manila loam, 4 to 8 percent slopes. This very deep, well drained soil is on alluvial fans and on foothills. The soil formed in alluvium derived dominantly from sandstone and limestone. Slopes are long and convex or concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,800 to 7,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is brown loam about 7 inches thick. The subsoil is reddish yellow clay and clay loam about 36 inches thick. The substratum is pink and reddish yellow gravelly loam.

Included in this unit are about 5 percent Manila loam, 8 to 15 percent slopes, and 5 percent Yeates Hollow very stony loam, 6 to 10 percent slopes, on alluvial fans. Sheep Creek very cobbly loam, 10 to 30 percent slopes, on mountainsides, makes up 5 percent of this unit. The percentage of these included soils varies from one area to another.

Permeability of this Manila soil is slow. Available water capacity is about 9 to 10 inches. Water supplying capacity is 2 to 14 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 80 percent perennial grasses, 10 percent forbs, and 10 percent shrubs. Important plant species are bluebunch wheatgrass, bearded wheatgrass, basin wildrye, muttongrass, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,850 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

Management practices needed to maintain or improve the potential plant community include proper grazing use with a planned grazing system.

This unit is well suited to range seeding. Plants suitable for seeding include intermediate wheatgrass, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. The main limitation is a short growing season and restricted accessiblity to many areas. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is moderately suited to recreation. The main limitation is slow permeability of the soil.

This unit is poorly suited to homesite development. The main limitation of the soil is the shrink-swell potential.

This map unit is in capability unit IIIe-M5, nonirrigated. The range site is Mountain Loam.

MeD—Manila loam, 8 to 15 percent slopes. This very deep, well drained soil is on alluvial fans and on foothills. It formed in alluvium derived dominantly from sandstone and limestone. Slopes are long and convex or concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,800 to 7,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is brown loam about 7 inches thick. The subsoil is dark brown silty clay and clay loam about 36 inches thick. The substratum is dark brown gravelly loam and gravelly clay loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Manila loam, 4 to 8 percent slopes, and 5 percent Yeates Hollow stony loam, 6 to 10 percent slopes, on alluvial fans. Sheep Creek very cobbly loam, 10 to 30 percent slopes, on mountainsides, also makes up 5 percent of the map unit. The percentage of these included soils varies from one area to another.

Permeability of this Manila soil is slow. Available water capacity is about 9 to 10 inches. Water supplying capacity is 12 to 14 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 80 percent perennial grasses, 10 percent forbs, and 10 percent shrubs. Important plant species are bluebunch wheatgrass, bearded wheatgrass, muttongrass, basin wildrye, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,850 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include intermediate wheatgrass, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. The main limitations are the short growing season and the restricted accessibility to many areas. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is suited to recreation. The main limitation of the soil is slow permeability.

This unit is poorly suited to homesite development. The main limitations are shrink-swell potential and slope.

This map unit is in capability unit IVe-M5, nonirrigated. The range site is Mountain Loam.

MfA—Medburn fine sandy loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from sandstone and igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,300 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown fine sandy loam about 8 inches thick. The upper 24 inches of the underlying material is very pale brown fine sandy loam. Below this to a depth of 60 inches or more is very pale brown fine sandy loam and gravelly sandy loam.

Included in this unit are about 5 percent Medburn fine sandy loam, 2 to 4 percent slopes; 5 percent Linoyer very fine sandy loam, 1 to 2 percent slopes; and 5 percent Hiko Peak stony sandy loam, 4 to 8 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another. Also included are small areas of a soil near the Jericho Sand Dunes, which is similar to the Medburn soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Medburn soil is moderately rapid. Available water capacity is about 5 to 7.5 inches. Water supplying capacity is 5 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, barley, and wheat.

The potential plant community on this soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are needleandthread, Indian ricegrass, Wyoming big sagebrush, and bottlebrush squirreltail. The normal

expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Sprinkler irrigation is the most suitable method of applying water. Because this soil is droughty, applications of irrigation water should be light and frequent. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIe-26, irrigated, and VIs-S6, nonirrigated. The range site is Semidesert Sandy Loam.

MfB—Medburn fine sandy loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from sandstone and igneous rocks. Slopes are long and convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,300 feet. In most areas the average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown fine sandy loam about 8 inches thick. The upper 24 inches of the underlying material is very pale brown fine sandy loam. Below this to a depth of 60 inches or more is very pale brown fine sandy loam and gravelly sandy loam.

Included in this unit are about 5 percent Medburn fine sandy loam, 0 to 2 percent slopes; 5 percent Linoyer very fine sandy loam, 2 to 5 percent slopes; 5 percent Hiko Peak stony sandy loam, 4 to 8 percent slopes. These soils are on alluvial fans. About 230 acres of this Medburn soil, 2 miles northwest of the town of Goshen, has a fluctuating water table at a depth of 12 to 48 inches. The percentage of the included soils varies from one area to another. Also included are small areas of a soil, north of Elberta and near the Jericho Sand Dunes and the Sevier Bridge Reservoir, which is similar to this Medburn soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Medburn soil is moderately rapid. Available water capacity is about 5 to 7 inches. Water supplying capacity is 5 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, barley, and wheat.

The potential plant community on this soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are needleandthread, Indian ricegrass, Wyoming big sagebrush, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Sprinkler irrigation is the most suitable method of applying water. Because this soil is droughty, applications of irrigation water should be light and frequent. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIe-S6, irrigated, and VIe-S6, nonirrigated. The range site is Semidesert Sandy Loam.

Mg—Mellor silt loam. This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from sandstone, limestone, and shale. Slopes are 0 to 2 percent, medium in length, and concave or convex. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs (fig. 11). Elevation is 4,500 to 5,000 feet. The average annual precipitation is 8 to 12 inches,

the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is saline, light brownish gray silt loam about 7 inches thick. The subsoil is pale brown silty clay loam about 13 inches thick. The substratum is pale brown silty clay loam to a depth of 60 inches or more. The subsoil and substratum are strongly affected by salt and alkali.

Included in this unit are about 5 percent Harding silt loam and 5 percent Woodrow silt loam, 1 to 2 percent slopes, on lake terraces. Manassa silt loam, 0 to 2 percent slopes, on both alluvial fans and lake terraces, makes up 5 percent of the map unit. The percentage of these included soils varies from one area to another.

Permeability of this Mellor soil is slow. Available water capacity is about 1.5 to 4 inches. Water supplying capacity is 3 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 5 percent forbs, and 55

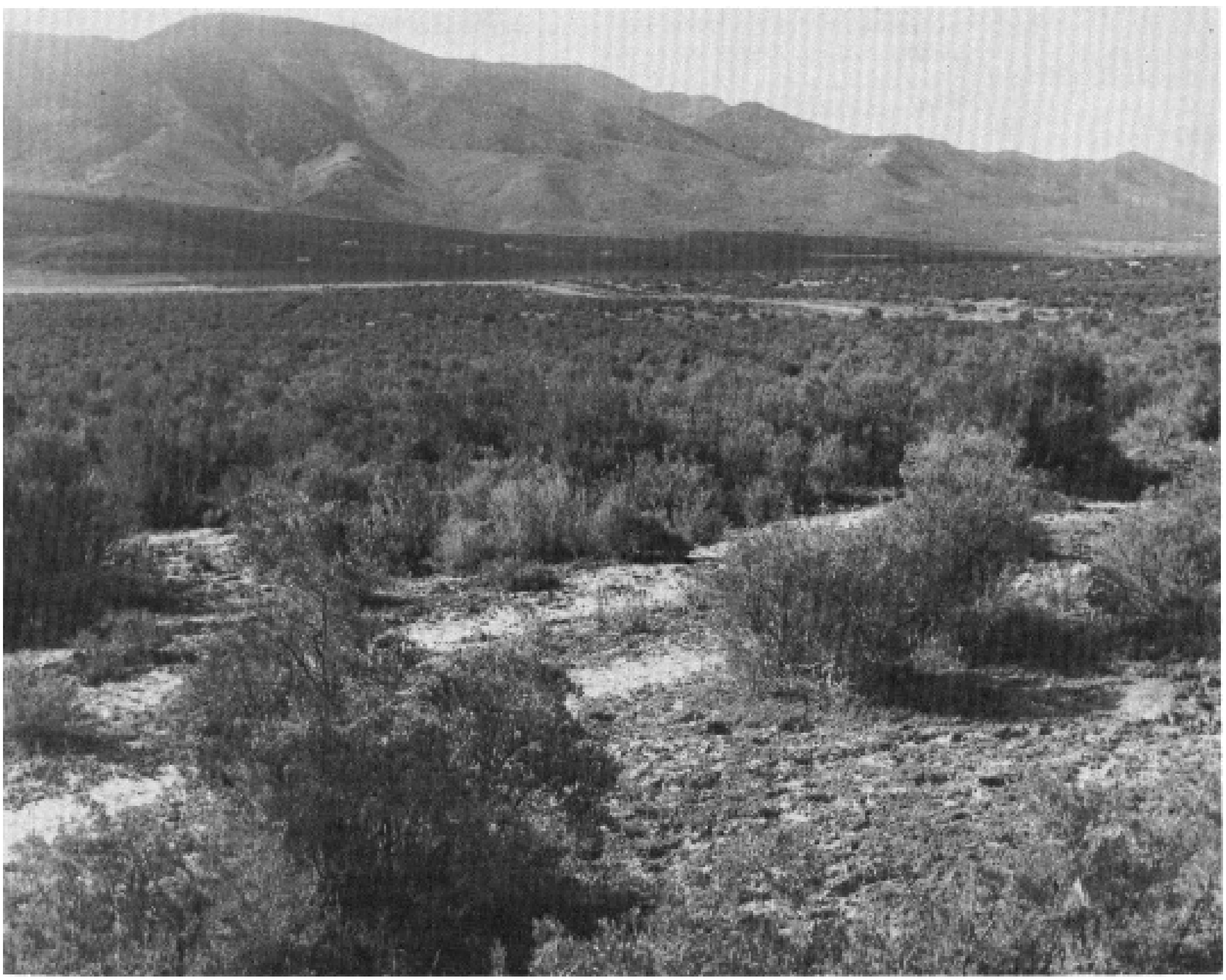


Figure 11.—This Mellor silt loam, foreground, is poorly suited to range seeding and crops because of its salt and alkali content. Lake Mountains are in the background.

percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as the result of continuous overgrazing.

This unit is poorly suited to range seeding. The main limitation of the soil is the content of salt and alkali.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitation is the content of salt and alkali of the soil.

This unit is poorly suited to recreational uses and homesite development. The main limitations are shrink-swell potential, slow permeability, and the content of salt and alkali in the soil.

This map unit is in capability unit VIIs-S8, nonirrigated. The range site is Alkali Flat.

Mh—Mellor silt loam, wet. This very deep, well drained soil is on flood plains. It formed in alluvial sediment derived dominantly from sedimentary rocks. Slopes are medium in length and are convex or concave. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,900 to 4,950 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 2 inches thick. The subsoil is pale brown silty clay loam about 18 inches thick. The upper 16 inches of the substratum is very pale brown silt loam. Below this to a depth of 60 inches or more is very pale brown fine sandy loam. The subsoil and substratum are strongly affected by salt and alkali.

Included in this unit are about 10 percent Manassa silt loam, 0 to 2 percent slopes, on alluvial plains, and 5 percent Medburn fine sandy loam, 0 to 2 percent slopes, on alluvial fans. Bramwell silt loam, on lake plains, makes up 5 percent of the unit. The percentage of included soils varies from one area to another.

Permeability of this Mellor soil is slow. Available water capacity is about 1.5 to 4 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is slow, and the hazard of water erosion is slight. A high water table is at a depth of 3 to 5 feet during spring months.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are inland saltgrass, alkali sacaton, sedges, and alkali bluegrass. The normal expected yield of total air-dried herbage is about 1,750 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing.

This unit is poorly suited to range seeding. The limitation of this soil is the content of salt and alkali.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitations are the content of salt and alkali in the soil and wetness.

This unit is poorly suited to recreational uses and homesite development. The main limitations are shrink-swell potential, wetness, slow permeability, and the content of salt and alkali.

This map unit is in capability unit VIIs-S8, nonirrigated. The range site is Alkali Bottom.

MkC—Modoc fine sandy loam, cool, 4 to 8 percent slopes. This moderately deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from igneous rocks. Slopes are medium in length and are convex. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown fine sandy loam about 4 inches thick. The subsoil is brown clay loam about 12 inches thick. The substratum is pale brown fine sandy loam about 23 inches thick. A silica cemented hardpan is at a depth of 39 inches. Depth to the hardpan ranges from 20 to 40 inches.

Included in this unit are about 10 percent Borvant cobbly loam, 2 to 8 percent slopes; 5 percent Donnardo stony loam, 2 to 8 percent slopes; and 5 percent Juab loam, 2 to 4 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Modoc soil is moderately slow. Available water capacity is about 3 to 5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and nonirrigated and irrigated crops. The main nonirrigated crop is wheat, and the main irrigated crops are alfalfa hay, barley, and wheat.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, antelope bitterbrush, and basin wildrye. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper

seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is suited to range seeding. The main limitations are low water capacity and depth to the hardpan. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

This unit is moderately suited to irrigated crops. The main limitation of the soil is the moderate depth to the hardpan. If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. Because the soil has steep slopes, moderate depth to a hardpan, and slow permeability, it is best suited to sprinkler irrigation. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

The unit is suited to recreational uses and homesite development. The main limitations are moderate depth to the hardpan and slope. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IIIe-25, irrigated, and VIe-U5, nonirrigated. The range site is Upland Loam.

Mm—Moroni silty clay loam. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from shale. Slopes are 0 to 2 percent, long, and concave or convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,850 to 5,450 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silty clay loam about 7 inches thick. The underlying material is light brownish gray silty clay to a depth of 60 inches or more.

Included in this unit are about 10 percent Nephi silt loam, on alluvial fans, and 5 percent Woodrow silt loam, 1 to 2 percent slopes, on lake plains. The percentage of the included soils varies from one area to another.

Permeability of this Moroni soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is moderate, and the hazard of water erosion is slight.

This unit is used for wildlife habitat, irrigated pasture, and nonirrigated and irrigated crops. The main nonirrigated crop is wheat, and the main irrigated crops are alfalfa hay, wheat, and barley.

If nonirrigated small grains are grown on this soil, a two-year fallow rotation is most suitable. The soil is suited to irrigated crops. The main limitation is slow permeability. Sprinkler irrigation is the most suitable method of applying water. Water needs to be applied at a slow rate over a long period to insure that the root zone is properly wetted. Maintaining crop residue on or near the surface reduces runoff or soil blowing and helps maintain soil tilth and organic matter content.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slow permeability and shrink-swell potential.

This map unit is in capability units IIIe-25, irrigated, and IVe-U5, nonirrigated.

MnF—Mortenson silt loam, 40 to 70 percent slopes. This very deep, well drained soil is very steep and on mountainsides. It formed in colluvium derived dominantly from conglomerate. Slopes are medium to long in length and convex or concave. In most areas the present vegetation is mainly fir and spruce. Elevation is 7,000 to 9,000 feet. The average annual precipitation is 25 to 35 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

Typically, the surface layer is light brownish gray and pale brown silt loam about 12 inches thick. The subsurface layer is very pale brown very stony silt loam about 19 inches thick. The subsoil is pale brown very stony clay to a depth of 60 inches or more.

Included in this unit are about 10 percent Flygare loam, 30 to 70 percent slopes, which supports aspen trees. A Mortenson soil that has a very stony loam surface layer makes up 5 percent of the unit. Parkay very stony loam, 30 to 70 percent slopes, is near ridgetops and also makes up 5 percent of the unit. The included soils are on mountainsides. The percentage of these soils varies from one area to another.

Permeability of this Mortenson soil is slow. Available water capacity is about 5.5 to 7.5 inches. Water supplying capacity is 12 to 19 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat and woodland.

This unit is well suited to Douglas-Fir for wood products. The main limitation is steepness of slope, which restricts use of equipment and increases the hazard of erosion. The yield of Douglas-fir at 100 years of age is 297.5 board feet per acre of trees that are 6.6 inches or more in diameter and 7,800 board feet per acre of trees 11.6 inches or more in diameter.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope and large stones.

This map unit is in capability unit VIIs-M, nonirrigated.

MoC—Mountainville very stony sandy loam, 3 to 10 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from limestone, sandstone, and quartzite. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,100 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown very stony sandy loam and brown very stony loam about 10 inches thick. The subsoil is brown and pale brown extremely stony clay loam about 19 inches. The substratum is very pale brown very cobbly loam to a depth of 60 inches.

Included in this unit are about 10 percent Donnardo stony loam, 2 to 8 percent slopes; 5 percent Borvant cobbly loam, 2 to 8 percent slopes; and 5 percent Renol stony fine sandy loam, 4 to 8 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Mountainville soil is moderate. Available water capacity is about 3.5 to 5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, this soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. The main limitation of the soil is the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreational or homesite development, the main limitation is stoniness.

This map unit is in capability unit VIs-UX, nonirrigated. The range site is Upland Stony Loam.

MpB—Mountainville gravelly loam, sandy substratum, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,000 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown gravelly loam about 7 inches thick. The subsoil is brown very cobbly clay loam about 10 inches thick. The upper 8 inches of the substratum is brown extremely cobbly sandy loam. Below this to a depth of 60 inches or more is light brownish gray very gravelly loamy sand and very cobbly loamy sand.

Included in this unit are about 10 percent Doyce loam, 2 to 4 percent slopes, and 5 percent Donnardo stony loam, 2 to 8 percent slopes. Both of these soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Mountainville soil is moderate. Available water capacity is about 3.5 to 5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, the soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. The main limitation of this soil is the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreational uses or homesite development, the main limitation is stoniness.

This map unit is in capability unit VIs-U4, nonirrigated. The range site is Upland Stony Loam.

MrB—Mountainville, sandy substratum-Doyce complex, 2 to 4 percent slopes. This map unit is on alluvial fans. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,000 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 55 percent Mountainville gravelly loam, sandy substratum, 2 to 4 percent slopes, and 35 percent Doyce loam, 2 to 4 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Donnardo stony loam, 2 to 8 percent slopes, and 5 percent Juab loam, 2 to 4 percent slopes. Both of these soils are on alluvial fans. The percentage of these included soils varies from one area to another.

The Mountainville soil, sandy substratum, is very deep and well drained. It formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Typically, the surface layer is brown gravelly loam about 7 inches thick. The subsoil is brown very cobbly clay loam about 10 inches thick. The upper 8 inches of the substratum is brown extremely cobbly sandy loam. Below this to a depth of 60 inches or more is light brownish gray very gravelly loamy sand and very cobbly loamy sand.

Permeability of the Mountainville soil is moderate. Available water capacity is about 3.5 to 5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

The Doyce soil is very deep and well drained. It formed in alluvium derived dominantly from limestone, sandstone, and quartzite. Typically, the surface layer is brown loam about 10 inches thick. The subsoil is pale brown clay loam about 9 inches thick. The substratum is very pale brown gravelly loam to a depth of 60 inches or more.

Permeability of the Doyce soil is moderately slow. Available water capacity is about 8 to 9 inches. Water supplying capacity is 9 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Mountainville soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Mountainville soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, this soil may be subject to a higher hazard of erosion.

This Mountainville soil is suited to range seeding. The main limitation of this soil is the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

The potential plant community on the Doyce soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,475 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Doyce soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing.

This Doyce soil is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are stoniness and shrink-swell potential.

This map unit is in capability unit VIs-U4, nonirrigated. The Mountainville soil is in Upland Stony Loam range site, and the Doyce soil is in Upland Loam range site.

MsD—Mower clay loam, 5 to 15 percent slopes. This moderately deep, well drained soil is on mountainsides. It formed in residuum derived dominantly from shale and limestone. Slopes are short to medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,500 to 8,000 feet. The average annual precipitation is 16 to 20 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is grayish brown clay loam about 11 inches thick. The subsoil is light brownish gray silty clay loam about 8 inches thick. The substratum is white shaly silty clay loam about 19 inches thick. Shale is at a depth of 36 inches. Depth to shale ranges from 20 to 40 inches.

Included in this unit are about 10 percent Sheep Creek very cobbly loam, 10 to 30 percent slopes, and 5 percent Lundy soils, on mountainsides. Ant Flat loam, 8 to 15 percent slopes, on alluvial fans, makes up 5

percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Mower soil is moderately slow. Available water capacity is about 4 to 5.5 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, Mountain big sagebrush, antelope bitterbrush, and Idaho fescue. The normal expected yield of total air-dried herbage is about 1,000 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is suited to range seeding. The limitation of this soil is the moderate depth to bedrock. Plants suitable for seeding include intermediate wheatgrass, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitation is the moderate depth of this soil to shale.

This map unit is in capability unit VIe-M, nonirrigated. The range site is Mountain Stony Loam.

MtF—Mower-Rock outcrop complex, 30 to 50 percent slopes. This map unit is on mountainsides. Slopes are short to medium and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,500 to 8,000 feet. The average annual precipitation is about 16 to 20 inches, the mean annual air temperature is 41 to 45 degrees F, and the freeze-free season is 70 to 110 days.

This unit is about 40 percent Mower stony clay loam, 30 to 50 percent slopes, and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Lizzant very cobbly loam, 30 to 60 percent slopes, on south-facing side slopes; 10 percent Kitchell cobbly loam, 30 to 70 percent slopes, on north-facing side slopes; and Lundy very cobbly loam, 30 to 70 percent slopes, on ridges. The included soils are on mountainsides. The percentage of these soils varies from one area to another.

The Mower soil is moderately deep and well drained. It formed in residuum derived dominantly from shale and limestone. Typically, the surface layer is grayish brown stony clay loam about 11 inches thick. The subsoil is light brownish gray silty clay loam about 8 inches thick. The substratum is white shaly silty clay loam about 19 inches thick. Shale is at a depth of 36 inches. Depth to shale ranges from 20 to 40 inches.

Permeability of this Mower soil is moderately slow. Available water capacity is about 4 to 5.5 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren rock.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Mower soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, antelope bitterbrush, and Idaho fescue. The normal expected yield of total air-dried herbage is about 1,000 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This soil is poorly suited to range seeding. The main limitations are steepness of slope and Rock outcrop.

This unit is poorly suited to recreation and homesite development. The main limitations are steepness of slope, stoniness, and Rock outcrop.

This map unit is in capability unit VIIe-M, nonirrigated. The range site is Mountain Stony Loam.

MuB—Musinia silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. The soil formed in alluvium derived dominantly from sedimentary rocks. Slopes are long. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,200 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown silt loam about 7 inches thick. Below this to a depth of 60 inches or more is pale brown silty clay loam.

Included on alluvial fans in this unit are about 5 percent Musinia silt loam, 2 to 5 percent slopes; 5 percent Juab loam, 0 to 2 percent slopes; 5 percent Keigley silt loam, dry, 0 to 2 percent slopes; and 5 percent Wales loam, dry, 2 to 4 percent slopes. The

percentage of the included soils varies from one area to another.

Permeability of this Musinia soil is moderately slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 6.5 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is high.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, barley, wheat, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and needleandthread. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are the high hazard of erosion, dustiness, shrink-swell potential, and moderately slow permeability. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

MuC—Musinia silt loam, 2 to 5 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. The soil formed in alluvium derived dominantly from sedimentary rocks. Slopes are long. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,200 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown silt loam about 7 inches thick. Below this to a depth of 60 inches or more is pale brown silty clay loam.

Included on alluvial fans in this unit are about 5 percent Musinia silt loam, 0 to 2 percent slopes; 5 percent Juab loam, 2 to 4 percent slopes; 5 percent Keigley silt loam, dry, 0 to 2 percent slopes; and 5 percent Wales loam, dry, 0 to 2 percent slopes. The percentage of these included soils varies from one area to another.

Permeability of this Musinia soil is moderately slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 6.5 to 9.0 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is high.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, barley, wheat, and corn used for silage.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and needleandthread. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing.

This unit is well suited to range seeding. The main limitation of this soil for seeding is lack of moisture. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are the high hazard of erosion, dustiness, shrink-swell potential, and moderately slow permeability. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability subclasses IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

MvB—Musinia silty clay loam, moist, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. The soil formed in alluvium derived dominantly from sedimentary rocks. Slopes are long. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,200 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown silty clay loam about 7 inches thick. Below this to a depth of 60 inches or more is pale brown silty clay loam.

Included in this unit are about 5 percent Musinia silty clay loam, moist, 2 to 5 percent slopes; 5 percent Juab loam, 0 to 2 percent slopes; 5 percent Keigley silt loam, dry, 0 to 2 percent slopes; and 5 percent Wales loam, 2 to 4 percent slopes. The percentage of these included soils varies from one area to another.

Permeability of this Musinia soil is moderately slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is high.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, nonirrigated small grain crops, and irrigated crops. The main irrigated crops are alfalfa hay, barley, wheat, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush, and basin wildrye. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to the unit. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are the high hazard of erosion, dustiness, shrink-swell potential, and moderately slow permeability. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

MvC—Musinia silty clay loam, moist, 2 to 5 percent slopes. This very deep, well drained soil is on alluvial fans and flood plains. This soil formed in alluvium derived dominantly from sedimentary rocks. Slopes are long. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,200 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown silty clay loam about 7 inches thick. Below this to a depth of 60 inches or more is pale brown silty clay loam.

Included in this unit are about 5 percent Musinia silty clay loam, moist, 0 to 2 percent slopes; 5 percent Juab loam, 2 to 4 percent slopes; 5 percent Keigley silt loam, dry, 0 to 2 percent slopes; and 5 percent Wales loam, 2 to 4 percent slopes. The percentage of these included soils varies from one area to another.

Permeability of this Musinia soil is moderately slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is high.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and nonirrigated and irrigated crops. The main nonirrigated crops are small grains, and the main irrigated crops are alfalfa hay, barley, wheat, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, antelope bitterbrush, and basin wildrye. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or

mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this soil. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. If nonirrigated small grains are grown, a two-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are the high hazard of erosion, dustiness, shrink-swell potential, and moderately slow permeability. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornnamental trees.

This map unit is in capability units IIIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

NaB—Nephi silt loam. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from shale, limestone, and sandstone. Slopes are 0 to 4 percent and are long and convex. Elevation is 5,000 to 5,500 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown silt loam about 9 inches thick. The subsoil is brown and light brown silty clay loam about 33 inches thick. The substratum is pink silt loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Parleys loam, 2 to 4 percent slopes, and 5 percent Dagor loam, 2 to 8 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Nephi soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 10.5 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used mainly for nonirrigated wheat and alfalfa hay. A few areas are used for irrigated wheat and alfalfa hay.

This unit is well suited to irrigated crops. If nonirrigated small grains are grown, a one-year fallow rotation is most suitable. If irrigated crops are grown, sprinkler irrigation is the most suitable method of applying water. Water needs to be applied at a slow rate over a long period to insure that the root zone is properly wetted. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential, slow permeability, and dustiness.

This map unit is in capability units IIIe-25, irrigated, and IIIe-U5, nonirrigated.

OaD—Orcky gravelly fine sandy loam, 4 to 15 percent slopes. This very deep, somewhat excessively drained soil is on alluvial fans, lake terraces, and terrace escarpments. The soil formed in alluvium and lake sediment derived dominantly from sedimentary and igneous rocks. Slopes are medium in length and are convex or concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is light yellowish brown gravelly fine sandy loam about 3 inches thick. The subsoil is very pale brown gravelly fine sandy loam 8 inches thick. The upper 6 inches of the substratum is very pale brown gravelly fine sandy loam. Below this to a depth of 60 inches or more is pale brown extremely gravelly loamy sand and extremely gravelly sand.

Included in this unit are about 10 percent Orcky gravelly fine sandy loam, 15 to 40 percent slopes, on both alluvial fans and terraces, and 10 percent Hiko Peak stony sandy loam, 8 to 15 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Orcky soil is moderate in the upper part and rapid in the lower part. Available water capacity is about 2 to 4.5 inches. Water supplying capacity is 4 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, and Wyoming sagebrush. The normal expected yield of total air-dried herbage is about 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. The main limitations are low precipitation, low available water capacity, and slope. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitations are the low available water capacity and droughtiness because of the soil's high content of sand and gravel. Precipitation in summer is not sufficient to grow nonirrigated crops.

If this unit is used for recreation or homesite development, the main limitations are small stones and the hazard of seepage. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit VIIs-U4, nonirrigated. The range site is Semidesert Stony Loam.

OaE—Orcky gravelly fine sandy loam, 15 to 40 percent slopes. This very deep, somewhat excessively drained soil is on alluvial fans, lake terraces, and terrace escarpments. The soil formed in alluvium and lake sediment derived dominantly from sedimentary and igneous rocks. Slopes are medium in length and are convex or concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is light yellowish brown gravelly fine sandy loam about 3 inches thick. The subsoil is very pale brown gravelly fine sandy loam 8 inches thick. The upper 6 inches of the substratum is very pale brown gravelly fine sandy loam. Below this to a depth of 60 inches or more is pale brown extremely gravelly loamy sand or extremely gravelly sand.

Included in this unit are about 10 percent Orcky gravelly fine sandy loam, 4 to 15 percent slopes, on both alluvial fans and terraces, and 10 percent Hiko Peak stony sandy loam, 15 to 25 percent slopes, on alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Orcky soil is moderate in the upper part and rapid in the lower part. Available water capacity is about 2 to 4.5 inches. Water supplying capacity is 4 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 2 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, and Wyoming big sagebrush. The normal expected yield of total air-dried herbage is about 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can be used to improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is very poorly suited to range seeding. The main limitations are low precipitation, low available water capacity, and slope.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitation is steepness of slope.

If this unit is used for recreation or homesite development, the main limitations are small stones, steepness of slope, and the hazard of seepage. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit VIIs-U4, nonirrigated. The range site is Semidesert Stony Loam.

PA—Pachic Calcixerolls, very steep. This map unit consists of shallow to very deep soils on scarps where landslides have removed the overlying material. These soils formed in alluvium, colluvium, and residuum derived dominantly from limestone, shale, conglomerate, and volcanic rocks. Slopes are 55 to 95 percent and are concave. In most areas the present vegetation is mainly grasses and trees. Elevation is 6,000 to 10,000 feet. The average annual precipitation is 16 to 30 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

These soils are variable but commonly the surface layer is very dark brown loam to stony loam about 12 inches thick. The subsoil is brown gravelly loam to extremely stony sandy loam about 19 inches thick. Limestone is at a depth of 31 inches. Depth to limestone is less than 20 inches to more than 60 inches.

Included in this unit are about 8 percent Rock outcrop and 15 percent Pachic Cryoborolls in some of the higher lying areas on north-facing slopes. The percentage of these inclusions varies from one area to another.

Permeability of these Pachic Calcixerolls is moderate to moderately rapid. Available water capacity is about 5 to 10 inches. Water supplying capacity is 9 to 20 inches. Effective rooting depth is 10 inches to 60 inches or more. inches or more.

This unit is used for wildlife habitat.

Vegetation varies from grasses and sagebrush to deciduous and coniferous forests. In most areas livestock grazing and recreational uses are severely limited because of steepness of slope. Because this soil is subject to landslides, management should concentrate on maintaining the stability of the soil.

This soil has not been placed in interpretative groups (all in National Forest).

PB—Pachic Haploxerolls, steep. This map unit consists of deep and very deep soils on landslides. These landslides are inactive except for the Payson Canyon slide and the Beaver Creek Dam slide. The soils formed in colluvium derived dominantly from limestone, shale, conglomerate, or volcanic rocks. Slopes generally are about 30 to 60 percent. In most areas the present vegetation is mainly grasses, shrubs, and trees. Elevation is 6,000 to 10,000 feet. The average annual precipitation is 16 to 30 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 100 days.

These soils are variable but commonly the surface layer is dark brown loam to stony sandy loam about 15 inches thick. The subsoil is dark brown loam to extremely stony sandy loam about 14 inches thick. The substratum is brown to reddish brown gravelly clay loam to extremely stony sandy loam to a depth of 40 to 60 inches. Bedrock is at a depth of 40 to 60 inches in some pedons.

Included in this unit are about 20 percent Pachic Cryoborolls in some of the higher lying areas on north-facing slopes; 10 percent Pachic Haploxerolls, 10 to 30 percent slopes, which is less sloping; and 2 percent Rock outcrop. The percentage of these inclusions varies from one area to another.

The permeability of these Pachic Haploxerolls is moderately slow to moderately rapid. Available water capacity is about 5 to 10 inches. Water supplying capacity is 9 to 20 inches. Effective rooting depth is 40 inches to more than 60 inches.

This unit is used as rangeland and for wildlife habitat.

Because of the variability of aspect, vegetation ranges from sagebrush or juniper, mainly on south-facing slopes, to fir or aspen, on north-facing slopes. The areas of this unit that are subject to slippage have limited use for livestock grazing and roads. Slope limits access by livestock and results in overgrazing of the less sloping areas. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This soil has not been placed in interpretive groups.

PC—Pachic Cryoborolls, sloping. This map unit consists of very deep soils in mountain meadows in saddles. These soils formed in alluvium and residuum derived dominantly from limestone, sandstone, and volcanic rocks. Slopes are 2 to 15 percent and are concave or convex. In most areas the present vegetation is mainly grasses and forbs. Elevation is 7,000 to 8,000 feet. The average annual precipitation is 20 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

These soils are variable but commonly the surface layer is dark brown to black silt loam to clay loam about 14 inches thick. The subsoil is brown to dark reddish brown silt loam to gravelly clay loam about 22 inches thick. The substratum is brown to red gravelly or cobbly silty clay silt loam or clay loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Cumulic Cryoquolls, in drainageways, and 10 percent Flygare loam, 8 to 30 percent slopes, which is steeper and on the north-facing slopes. The percentage of these included soils varies from one area to another.

The permeability of these Pachic Cryoborolls is moderate and moderately slow. Available water capacity is about 8 to 11 inches. Water supplying capacity is 14 to 22 inches. Effective rooting depth is 60 inches or more.

This unit is used as rangeland and for wildlife habitat and recreation.

In most areas the present vegetation is mainly grasses and low forbs and a few scattered clumps of oak, maple, and aspen. Range can be seeded if it is in poor condition. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is suited to hunting, hiking, and camping; however, vehicles should be used only when the soil is dry and firm.

This soil has not been placed in interpretive groups.

PD—Pachic Cryoborolls, north slopes. This map unit consists of shallow to very deep soils on north-facing sides of mountains. The shallow soils generally are on the higher parts of side slopes, and the very deep soils are on the lower parts of side slopes. These soils formed in colluvium and residuum derived predominantly from limestone, sandstone, shale, and volcanic rocks. Slopes are 30 to 70 percent and are convex or concave. In most areas the present vegetation is mainly trees, grasses, and shrubs. Elevation is 7,000 to 10,000 feet. The average annual precipitation is 16 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

These soils are variable but commonly the surface layer is dark brown gravelly loam to stony loam about 4 to 22 inches thick. The subsoil is dark brown to reddish brown gravelly loam to very stony clay loam about 6 to 12 inches thick. The substratum is brown to yellowish red gravelly loam to extremely stony clay loam about 3 to 28 inches thick. Limestone is at a depth of 13 to 62 inches.

Included in this unit are about 20 percent of the steeper Typic Cryoborolls, on north-facing and on south-facing slopes, and 5 percent Rock outcrop. The percentage of these inclusions varies from one area to another.

Permeability of these Pachic Cryoborolls is moderate to moderately slow. Available water capacity is about 5 to 10 inches. Water supplying capacity is 10 to 20 inches. Effective rooting depth is 20 to 60 inches or more.

This unit is used as rangeland and for wildlife habitat and hunting.

In most areas the present vegetation is mainly oak, maple, fir, or aspen trees and an understory of grasses and forbs and small clearings of grass and low shrubs. Slope limits access by livestock and results in overgrazing of the less sloping areas. Grazing should be delayed until the soil in this unit is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit has not been placed in interpretive groups.

PeD—Parkay-Rock outcrop complex, 8 to 30 percent slopes. This map unit is on mountainsides. Slopes are short and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 8,000 to 9,000 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 36 to 45 degrees F, and the freeze-free season is 30 to 80 days.

This unit is about 65 percent Parkay very stony loam, 8 to 30 percent slopes, and 10 percent Rock outcrop. The Parkay soil is on mountaintops. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 15 percent Flygare loam, 8 to 30 percent slopes, in concave areas, and Starley very cobbly loam, 8 to 30 percent slopes, along ridges. These included soils are on mountainsides. The percentage of these soils varies from one area to another.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments or ridges.

The Parkay soil is deep and well drained. It formed in colluvium and residuum derived dominantly from quartzite, sandstone, and limestone. Typically, the surface layer is dark brown very stony loam about 18 inches thick. The subsoil is yellowish brown very cobbly clay loam about 24 inches thick. The substratum is yellowish brown extremely gravelly clay loam about 5 inches thick. Fractured limestone is at a depth of 47 inches. Depth to limestone ranges from 40 to 60 inches.

Permeability of this Parkay soil is moderately slow. Available water capacity is about 3.5 to 6.5 inches. Water supplying capacity is 8 to 12 inches. Effective rooting depth is 40 to 60 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Parkay soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrasss, antelope bitterbrush, bulbous oniongrass, Idaho fescue, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,700 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This soil is well suited to range seeding. The main limitation is stoniness. Plants suitable for seeding include Whitmar wheatgrass, bitterbrush, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to recreation and homesite development. The main limitation is stoniness.

This map unit is in capability unit VIIe-M, nonirrigated. The range site is Mountain Stony Loam.

PeF—Parkay-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 7,500 to 10,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

This unit is about 50 percent Parkay very stony loam, 30 to 70 percent slopes, on mountainsides, and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Hamtah loam, 30 to 70 percent slopes; 5 percent Agassiz very stony loam, 30 to 70 percent slopes; and 5 percent Flygare loam, 30 to 70 percent slopes, on mountainsides. Yeates Hollow very stony loam, 25 to 40 percent slopes, on alluvial fans, also makes up 5 percent of this unit. The percentage of these included soils varies from one area to another.

The Parkay soil is deep and well drained. It formed in colluvium and residuum derived dominantly from quartzite, sandstone, and limestone. Typically, the surface layer is dark brown very stony loam about 18 inches thick. The subsoil is yellowish brown very cobbly clay loam about 24 inches thick. The substratum is yellowish brown extremely gravelly clay loam about 5 inches thick. Fractured limestone is at a depth of 47 inches. Depth to limestone ranges from 40 to 60 inches.

Permeability of this Parkay soil is moderately slow. Available water capacity is about 3.5 to 6.5 inches. Water supplying capacity is 8 to 12 inches. Effective rooting depth is 40 to 60 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Parkay soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, bulbous oniongrass, Idaho fescue, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,700 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This soil is poorly suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, bitterbrush, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is poorly suited to recreation and homesite development. The main limitations are steepness of slope and stoniness.

This map unit is in capability unit VIIe-M, nonirrigated. The range site is Mountain Stony Loam.

PfA—Parleys loam, 0 to 2 percent slopes. This very deep, well drained soil is on lake terraces and alluvial fans. It formed in lake sediment and alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are long and concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,700 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown loam about 11 inches thick. The subsoil is brown silty clay loam about 15 inches thick. The upper 26 inches of the substratum is light gray silty clay loam. Below this to a depth of 60 inches or more is light gray silt loam.

Included in this unit are about 5 percent Parleys loam, 2 to 4 percent slopes; 5 percent Hillfield silt loam, 2 to 5 percent slopes; 5 percent Taylorsville silt loam, 0 to 2 percent slopes; and 5 percent Hupp gravelly loam, 4 to 8 percent slopes. These soils are on lake terraces and alluvial fans. The percentage of the included soils varies from one area to another.

Permeability of this Parleys soil is moderately slow. Available water capacity is about 9 to 11 inches. Water supplying capacity is 11 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential and moderately slow permeability.

This map unit is in capability unit IIIe-U5, nonirrigated. The range site is Upland Loam.

PfB—Parleys loam, 2 to 4 percent slopes. This very deep, well drained soil is on lake terraces and alluvial fans. It formed in lake sediment and alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are long and concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,700 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown loam about 11 inches thick. The subsoil is brown silty clay loam about 15 inches thick. The upper 26 inches of the substratum is light gray silty clay loam. Below this to a depth of 60 inches or more is light gray silt loam.

Included in this unit are about 5 percent Parleys loam, 0 to 2 percent slopes; 5 percent Hillfield silt loam, 2 to 5 percent slopes; 5 percent Taylorsville silt loam, 2 to 4 percent slopes; and 5 percent Hupp gravelly loam, 4 to 8 percent slopes. These soils are on lake terraces and alluvial fans. The percentage of these included soils varies from one area to another.

The permeability of this Parleys soil is moderately slow. Available water capacity is about 9 to 11 inches. Water supplying capacity is 11 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this soil, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential and moderately slow permeability.

This map unit is in capability unit IIIe-U5, nonirrigated. The range site is Upland Loam.

PfC—Parleys loam, 4 to 8 percent slopes. This very deep, well drained soil is on lake terraces and alluvial fans. It formed in lake sediment and alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are long and concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,700 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is grayish brown loam about 11 inches thick. The subsoil is brown silty clay loam about 15 inches thick. The upper 26 inches of the substratum is light gray silty clay loam. Below this to a depth of 60 inches or more is light gray silt loam.

Included in this unit are about 5 percent Parleys loam, 2 to 4 percent slopes; 5 percent Hillfield silt loam, 2 to 5 percent slopes; 5 percent Taylorsville silt loam, 4 to 8 percent slopes; and 5 percent Hupp gravelly loam, 4 to 8 percent slopes. These soils are on lake terraces and alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Parleys soil is moderately slow. Available water capacity is about 9 to 11 inches. Water supplying capacity is 11 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat and nonirrigated small grains.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, Indian ricegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this soil, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential and moderately slow permeability.

This map unit is in capability unit IIIe-U5, nonirrigated. The range site is Upland Loam.

PgC—Pharo very stony loam, 3 to 10 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is brown very stony loam about 8 inches thick. The subsoil is pale brown very cobbly loam 10 inches thick. The substratum to a depth of 60 inches or more is very pale brown very gravelly loam and very gravelly sandy loam.

Included in this unit are about 8 percent Donnardo stony loam, 2 to 8 percent slopes; 6 percent Hiko Peak stony loam, 4 to 8 percent slopes; and 4 percent Juab loam, 4 to 8 percent slopes, on alluvial fans. Lodar very cobbly loam, 3 to 30 percent slopes, on hillsides, makes up 2 percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Pharo soil is moderate. Available water capacity is about 5 to 6 inches. Water supplying

capacity is 7 to 8.5 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, bottlebrush squirreltail, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 850 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. The main limitations of the soil is the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitation is stoniness.

This map unit is in capability unit VIs-UX, nonirrigated. The range site is Upland Stony Loam.

PhD—Pibler gravelly fine sandy loam, 4 to 15 percent slopes. This shallow, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, quartzite, sandstone, and igneous rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,900 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the upper part of the surface layer is brown gravelly fine sandy loam about 4 inches thick. The lower part is pale brown very gravelly loam 4 inches thick. The underlying material is pale brown very cobbly loam about 8 inches thick. A lime cemented hardpan, 6 inches thick, is at a depth of 16 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans. Depth to the cemented hardpan ranges from 10 to 20 inches.

Included in this unit are about 5 percent Borvant cobbly loam, 2 to 8 percent slopes, on adjacent ridges; 5 percent Pober fine sandy loam, 4 to 15 percent slopes, in swales; 5 percent Donnardo stony loam, 2 to 8 percent slopes, on alluvial fans; and 5 percent Juab loam, 4 to 8 percent slopes, also on fans. The percentage of included soils varies from one area to another.

Permeability of this Pibler soil is moderately rapid. Available water capacity is about 1.5 to 2 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, black sagebrush, Nevada bluegrass, and Sandberg bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitation is the depth of this soil to the hardpan.

This unit is poorly suited to recreation and homesite development. The main limitation is shallow depth of the soil to the hardpan.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

PK—Pits-Dumps complex. This map unit consists mainly of mine pits and associated tailing dumps. Included in this unit are groups of settling ponds that have been used during and after mining operations and land that has been covered by material eroded from mine dumps.

Unless it is reclaimed, this unit generally produces very little vegetation and is severely limited for most uses.

This map unit is in capability class VIII.

PmD—Pober fine sandy loam, 4 to 15 percent slopes. This moderately deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, quartzite, sandstone, and igneous rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,900 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the upper part of the surface layer is dark brown fine sandy loam about 4 inches thick. The lower part is brown gravelly loam about 9 inches thick. The underlying material is pale brown and light gray very gravelly loam about 13 inches thick. A lime cemented

hardpan, 6 inches thick, is at a depth of 26 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans. Depth to the hardpan ranges from 20 to 40 inches (fig. 12).

Included in this unit are about 5 percent Pibler gravelly fine sandy loam, 4 to 15 percent slopes, on ridges; 5 percent Borvant cobbly loam, 2 to 8 percent slopes, on ridges; 5 percent Donnardo stony loam, 2 to 8 percent slopes, on fans; and 5 percent Juab loam, 4 to 8 percent slopes, on fans. The percentage of included soils varies from one area to another.

Permeability of this Pober soil is moderate. Available water capacity is about 2 to 4 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat (fig. 13).

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, needleandthread, antelope bitterbrush, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 850 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland (fig. 13).

This unit is suited to range seeding. The main limitations are the depth of the soil to the hardpan and slope. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are depth to the cemented hardpan and slope.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Stony Loam.

PnD—Pober-Pibler complex, 4 to 15 percent slopes. This map unit is on alluvial fans. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,900 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

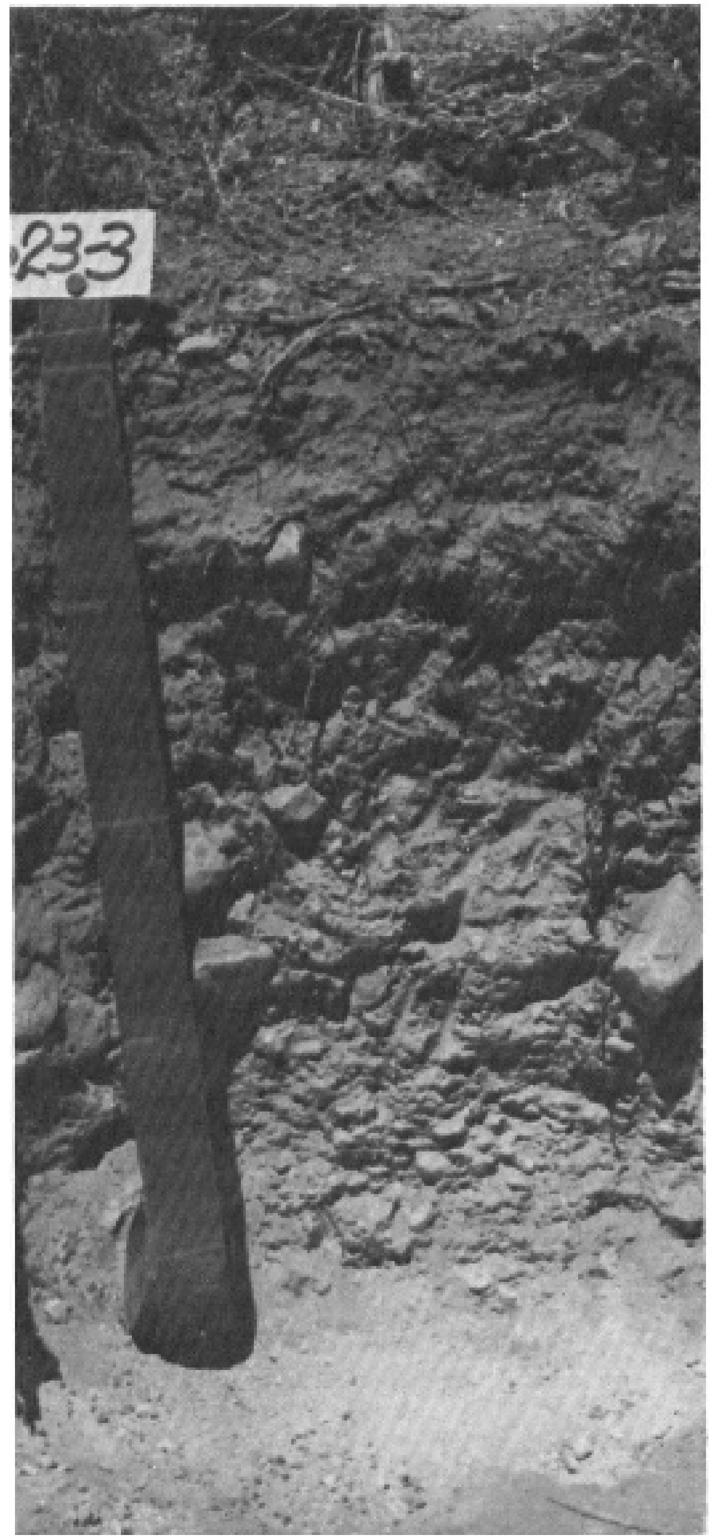


Figure 12.—Profile of Pober fine sandy loam, 4 to 15 percent slopes.

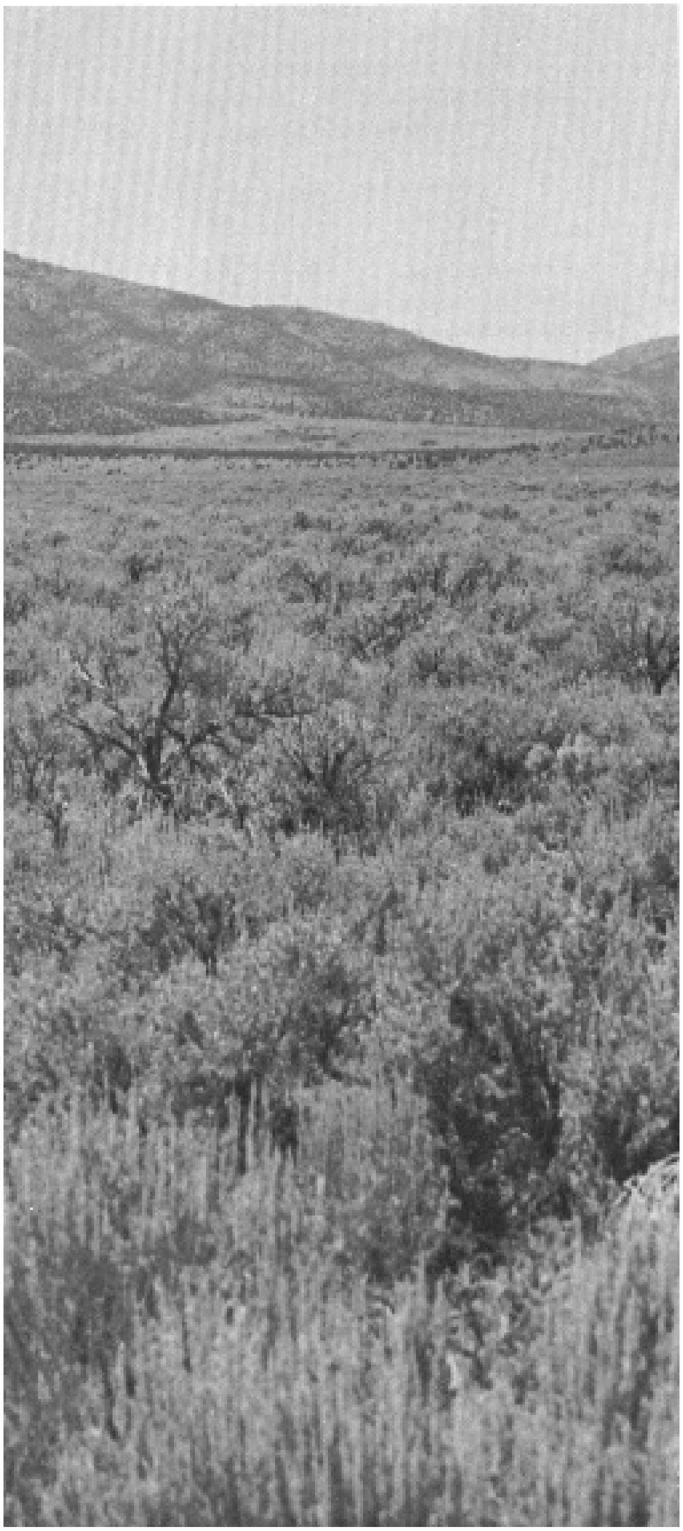


Figure 13.—Landscape of Pober fine sandy loam, 4 to 15 percent slopes, in rangeland.

This unit is about 50 percent Pober fine sandy loam, 4 to 15 percent slopes, and 40 percent Pibler gravelly fine sandy loam, 4 to 15 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Donnardo stony loam, 2 to 8 percent slopes, and 5 percent Juab loam, 4 to 8 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Pober soil is moderately deep and well drained. It formed in alluvium derived dominantly from limestone, quartzite, sandstone, and igneous rocks. Typically, the upper part of the surface layer is dark brown fine sandy loam about 4 inches thick, and the lower part is brown gravelly loam about 9 inches thick. The underlying material is pale brown and light gray very gravelly loam about 13 inches thick. A lime cemented hardpan, 6 inches thick, is at a depth of 26 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans. Depth to the cemented hardpan ranges from 20 to 40 inches.

Permeability of the Pober soil is moderate. Available water capacity is about 2 to 4 inches. Water supplying capacity is 4 to 6 inches. The organic matter content of the surface layer is 20 to 40 percent. Effective rooting depth is 1 inch to 2 inches. Runoff is medium, and the hazard of water erosion is slight.

The Pibler soil is shallow and well drained. It formed in alluvium derived dominantly from limestone, quartzite, sandstone, and igneous rocks. Typically, the upper part of the surface layer is brown gravelly fine sandy loam about 4 inches thick. The lower part is pale brown very gravelly loam 4 inches thick. The underlying material is pale brown very cobbly loam about 8 inches thick. A lime cemented hardpan, 6 inches thick, is at a depth of 16 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans. Depth to the cemented hardpan ranges from 10 to 20 inches.

Permeability of the Pibler soil is moderately rapid. Available water capacity is 1.5 to 2 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Pober soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, needleandthread, antelope bitterbrush, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 850 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Pober soil include proper grazing use, proper seasonal use, good water distribution, and a

planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This Pober soil is suited to range seeding. The main limitations of the soil for seeding are depth to the hardpan and slope. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, and species of the potential plant community for which seed or stock is available.

The potential plant community on the Pibler soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, black sagebrush, Nevada bluegrass, and Sandberg bluegrass. The normal expected yield of total air dry herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Pibler soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical application and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This Pibler soil is poorly suited to range seeding. The main limitation of the soil is depth to the hardpan and slope.

This unit is poorly suited to recreational uses and homesite development. The main limitation is depth of the soil to the hardpan.

This map unit is in capability unit VIIs-U3, nonirrigated. The Pober soil is in Upland Stony Loam range site and the Pibler soil is in Upland Shallow Loam range site.

Po—Provo Bay silt loam. This very deep, poorly drained soil is on flood plains and lake plains. It formed in lake sediment and alluvium derived dominantly from sedimentary rocks. Slopes are 0 to 1 percent and are long and concave. In most areas the present vegetation is mainly grasses. Elevation is 4,490 to 5,000 feet. The average annual precipitation is about 10 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is black silt loam about 15 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, gray silty clay loam. This soil is slightly affected by salt.

Included in this unit are about 8 percent Bramwell silt loam, on both lake plains and low lake terraces; 7 percent Roshe Springs silt loam, on flood plains; and 5 percent Saltair silt loam, on lake plains. The percentage of included soils varies from one area to another.

Permeability of this Provo Bay soil is slow. Available water capacity is about 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is ponded, and the hazard of water erosion is slight. A seasonal high water table is at a depth of 0 to 12 inches throughout the year. This soil is subject to frequent periods of flooding.

This unit is used mainly as rangeland and for wildlife habitat.

The potential plant community on this soil is about 95 percent perennial grasses, 3 percent forbs, and 2 percent shrubs. Important plant species are sedges, tufted hairgrass, and rush. The normal expected yield of total air-dried herbage is about 4,000 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sedges may develop as a result of continuous overgrazing.

This unit is well suited to range seeding. Plants suitable for seeding include timothy and species of the potential plant community for which seed or stock is available.

This map unit is in capability unit Vw-22, nonirrigated. The range site is Wet Meadow.

Pp—Provo Bay-Cheebe complex. This map unit is on lake terraces. Slopes are 0 to 1 percent and are long and concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 4,850 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 55 percent Provo Bay silt loam, in depressional areas, and 35 percent Cheebe silty clay loam, in slightly higher lying areas. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Bramwell silt loam, on lake plains and low lake terraces, and 5 percent Woodrow silt loam. The included soils on lake plains have slopes of 0 to 1 percent. The percentage of the included soils varies from one area to another.

The Provo Bay soil is very deep and poorly drained. It formed in lake sediment and alluvium derived dominantly from sedimentary rocks. Typically, the surface layer is black silt loam about 15 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, gray silty clay loam. This soil is slightly saline throughout.

Permeability of the Provo Bay soil is slow. Available water capacity is about 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is ponded, and the hazard of water erosion is slight. A seasonal high water table is at a depth of 0 to 12 inches throughout the year. This soil is subject to frequent periods of flooding.

The Cheebe soil is very deep and well drained. It formed in lake sediment derived dominantly from

sedimentary rocks. Typically, the surface layer is light brownish gray silty clay loam about 8 inches thick. The subsoil is very strongly alkaline and very strongly calcareous, light gray silty clay about 36 inches thick. The substratum is white silty clay loam to a depth of 60 inches or more.

Permeability of the Cheebe soil is slow. Available water capacity is about 6 to 10 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is ponded, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Provo Bay soil is about 95 percent perennial grasses, 3 percent forbs, and 2 percent shrubs. Important plant species are sedges, tufted hairgrass, and rush. The normal expected yield of total air-dried herbage is about 4,000 pounds per acre.

Management practices needed to maintain or improve vegetation on the Provo Bay soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sedges may develop as a result of continuous overgrazing.

This Provo Bay soil is well suited to range seeding. Plants suitable for seeding include timothy and species of the potential plant community for which seed or stock is available.

The potential plant community on the Cheebe soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 950 pounds per acre.

Management practices needed to maintain or improve vegetation on the Cheebe soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing. Brush management by chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This Cheebe soil is poorly suited to range seeding. The main limitations of this soil are the content of salt and alkali and low precipitation.

This map unit is in capability unit VIIs-58, nonirrigated. The Provo Bay soil is in Wet Meadow range site, and the Cheebe soil is in Alkali Flat range site.

RaD—Reebok cobbly loam, 4 to 15 percent slopes. This shallow, well drained soil is on alluvial fans and hillsides. It formed in alluvium and colluvium derived dominantly from igneous rock, limestone, and quartzite. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,600 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is dark grayish brown cobbly loam about 5 inches thick. The subsoil is brown very cobbly clay loam about 10 inches thick. The substratum is extremely gravelly loam about 4 inches thick. A lime cemented hardpan, 4 inches thick, is at a depth of 19 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans. Depth to the cemented hardpan ranges from 10 to 20 inches.

Included in this unit are about 5 percent Reebok cobbly loam, 15 to 40 percent slopes, on both alluvial fans and hillsides; 5 percent Sumine very cobbly loam, 10 to 30 percent slopes, and 5 percent Reywat very stony loam, 10 to 30 percent slopes, on hillsides; and 5 percent Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The permeability of this Reebok soil is moderate. Available water capacity is about 2 to 3 inches. Water supplying capacity is 4 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Indian ricegrass, Sandberg bluegrass, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitations are depth of the soil to the hardpan and the content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. The main limitation is shallow depth to the hardpan.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

RaE—Reebok cobbly loam, 15 to 40 percent slopes. This shallow, well drained soil is on alluvial fans. It formed in alluvium and colluvium derived dominantly from igneous rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,600 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52

degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is dark grayish brown cobbly loam about 5 inches thick. The subsoil is brown very cobbly clay loam about 10 inches thick. The substratum is extremely gravelly loam about 4 inches thick. A lime cemented hardpan, 4 inches thick, is at a depth of 19 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans. Depth to the cemented hardpan ranges from 10 to 20 inches.

Included in this unit are about 5 percent Reebok cobbly loam, 4 to 15 percent slopes, on both alluvial fans and hillsides; 5 percent Sumine very cobbly loam, 10 to 30 percent slopes, and 5 percent Reywat very stony loam, 10 to 30 percent slopes, on hillsides; and 5 percent Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Reebok soil is moderate. Available water capacity is about 2 to 3 inches. Water supplying capacity is 4 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Indian ricegrass, Sandberg bluegrass, and Nevada bluegrass. The normal expected yield of total air dry herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of desirable plants still remain.

This unit is poorly suited to range seeding. The main limitations of the soil are depth to the hardpan, the content of rock fragments, and slope.

This unit is poorly suited to recreation and homesite development. The main limitation is shallow depth of the soil to the hardpan.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

RbC—Renol stony fine sandy loam, 4 to 8 percent slopes. This moderately deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from sandstone, quartzite, and igneous rocks. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is brown stony fine sandy loam and gravelly loam about 9 inches thick. The upper part of the subsoil is brown very gravelly clay loam about 8 inches thick. The lower part of the subsoil is brown extremely gravelly clay loam about 10 inches thick. A lime cemented hardpan, 5 inches thick, is at a depth of 27 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly sandy loam and indurated hardpans. Depth to the cemented hardpan ranges from 20 to 40 inches (fig. 14).

Included in this unit are about 5 percent Mountainville very stony sandy loam, 3 to 10 percent slopes; 5 percent Donnardo stony loam, 2 to 8 percent slopes; 5 percent Pober fine sandy loam, 4 to 15 percent slopes; and 3 percent Doyce loam, 4 to 8 percent slopes. These soils are on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Renol soil is moderate. Available water capacity is about 2 to 4 inches. Water supplying capacity is 4 to 7 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat (fig. 15).

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air dry herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. The main limitations of the soil are depth to the hardpan and the content of rock fragments. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are stoniness and shallow depth of the soil to the hardpan.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Stony Loam.

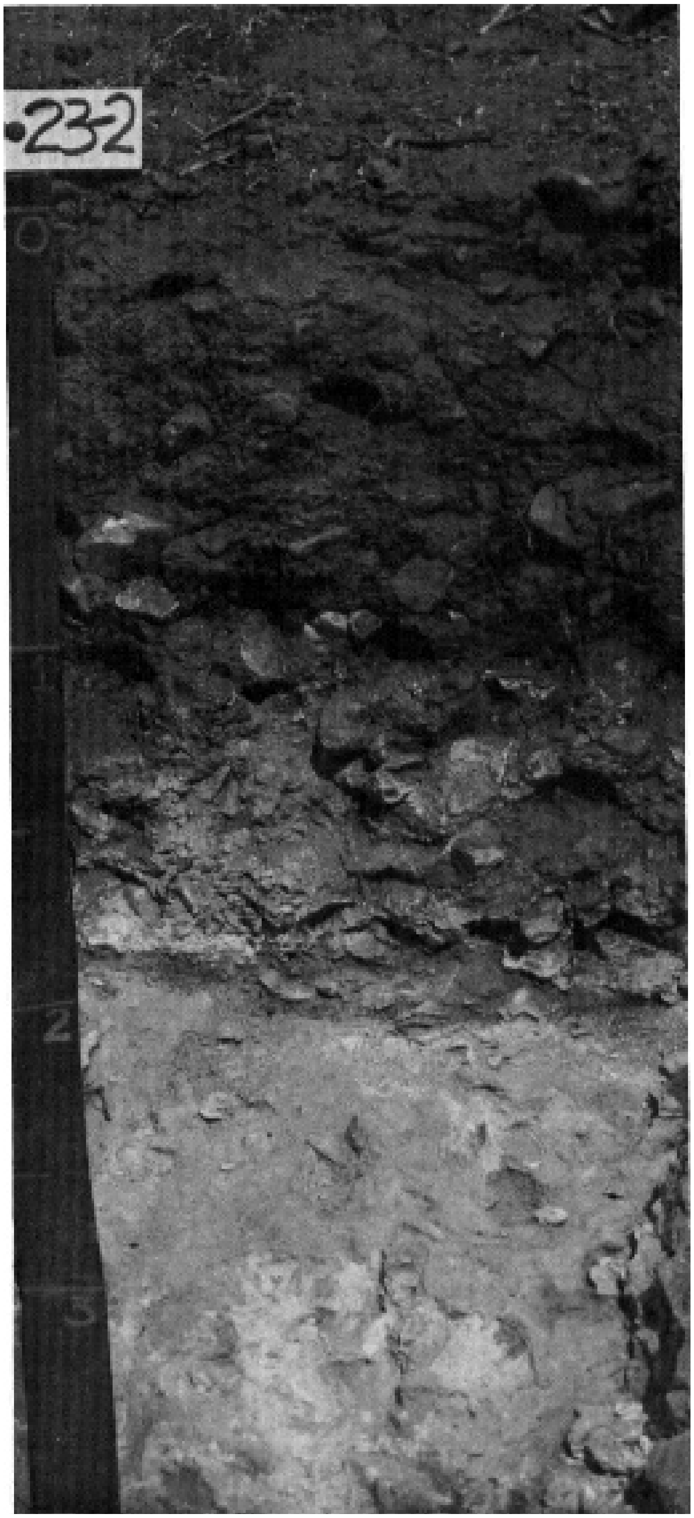


Figure 14.—Profile of Renol stony fine sandy loam, 4 to 8 percent slopes.



Figure 15.—Landscape of Renol stony fine sandy loam, 4 to 8 percent slopes.

RcD—Renol-Reebok complex, 4 to 15 percent slopes. This map unit is on alluvial fans. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 45 percent Renol stony fine sandy loam, 4 to 8 percent slopes, and 40 percent Reebok cobbly loam, 4 to 15 percent slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Dagor loam, 2 to 8 percent slopes; 5 percent Sumine very cobbly loam, 10 to 30 percent slopes; and 5 percent Reywat very stony loam, 10 to 30 percent slopes. These soils are on hillsides. The percentage of included soils varies from one area to another.

The Renol soil is moderately deep and well drained. It formed in alluvium derived dominantly from sandstone, quartzite, and igneous rocks. Typically, the surface layer is brown stony fine sandy loam and gravelly loam about 9 inches thick. The upper part of the subsoil is brown very gravelly clay loam about 8 inches thick. The lower part of the subsoil is brown extremely gravelly clay loam about 10 inches thick. A lime cemented hardpan, 5 inches thick, is at a depth of 27 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly sandy loam and indurated hardpans. Depth to the cemented hardpan ranges from 20 to 40 inches.

Permeability of the Renol soil is moderate. Available water capacity is about 2 to 4 inches. Water supplying capacity is 4 to 7 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

The Reebok soil is shallow and well drained. It formed in alluvium derived dominantly from igneous rocks. Typically, the surface layer is dark grayish brown cobbly loam about 5 inches thick. The subsoil is brown very cobbly clay loam about 10 inches thick. The substratum is extremely gravelly loam about 4 inches thick. A lime cemented hardpan, 4 inches thick, is at a depth of 19 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans. Depth to the hardpan ranges from 10 to 20 inches.

Permeability of the Reebok soil is moderate. Available water capacity is about 2 to 3 inches. Water supplying capacity is 4 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Renol soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,300 pounds per acre.

Management practices needed to maintain or improve vegetation on the Renol soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This Renol soil is suited to range seeding. The main limitations of this soil are depth to the hardpan, the content of rock fragments, and slope. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush and species of the potential plant community for which seed or stock is available.

The potential plant community on the Reebok soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Indian ricegrass, Sandberg bluegrass, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve vegetation on the Reebok soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This Reebok soil is poorly suited to range seeding. The main limitation for seeding is the depth of the soil to the hardpan.

If this unit is used for recreation or homesite development, the main limitations are stoniness and the depth of the soil to the hardpan.

This map unit is in capability unit VIIs-U3, nonirrigated. The Renol soil is in Upland Stony Loam range site, and the Reebok soil is in Upland Shallow Loam range site.

RdE—Reywat-Reebok-Rock outcrop complex, 10 to 30 percent slopes. This map unit is on hillsides and alluvial fans. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,400 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 40 percent Reywat very stony loam, 10 to 30 percent slopes; 35 percent Reebok cobbly loam, 15 to 40 percent slopes; and 15 percent Rock

outcrop. The Reywat soil is on south- and east-facing slopes, and the Reebok soil is on north- and west-facing slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans, and 5 percent Sumine very cobbly loam, 10 to 30 percent slopes, on hillsides. The percentage of these included soils varies from one area to another.

The Reywat soil is shallow and well drained. It formed in residuum derived dominantly from igneous rocks. Typically, the surface layer is brown very stony loam about 5 inches thick. The upper 4 inches of the subsoil is brown cobbly clay loam. The lower 8 inches is light yellowish brown very cobbly clay loam. Bedrock is at a depth of 17 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Reywat soil is moderately slow. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Reebok soil is shallow and well drained. It formed in alluvium and colluvium derived dominantly from igneous rocks. Typically, the surface layer is dark grayish brown cobbly loam about 5 inches thick. The subsoil is brown very cobbly clay loam about 10 inches thick. The substratum is extremely gravelly loam about 4 inches thick. A lime cemented hardpan, 4 inches thick, is at a depth of 19 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans. Depth to hardpan ranges from 10 to 20 inches.

Permeability of the Reebok soil is moderate. Available water capacity is about 2 to 3 inches. Water supplying capacity is 4 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on these soils is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, Indian ricegrass, and Sandberg bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop on the Reywat soil as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

These soils are poorly suited to range seeding. The main limitation of the Reywat soil is depth to rock. The main limitation of the Reebok soil is the depth to the hardpan.

This unit is poorly suited to recreational uses and homesite development. The main limitations are shallow depth of the soils, stoniness, and steepness of slope.

This map unit is in capability unit VIIs-U3, nonirrigated. This unit is in the Upland Shallow Loam range site.

ReE—Reywat-Rock outcrop complex, 10 to 30 percent slopes. This map unit is on hillsides and mountainsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,600 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 70 percent Reywat very stony loam, 10 to 30 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Borvant cobbly loam, 8 to 25 percent slopes, and 2 percent Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans, and 3 percent Lodar very cobbly loam, 3 to 30 percent slopes, on hillsides. The percentage of these included soils varies from one area to another.

The Reywat soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from igneous rocks. Typically, the surface layer is brown very stony loam about 5 inches thick. The upper 4 inches of the subsoil is brown very cobbly clay loam. The lower 8 inches is light yellowish brown extremely cobbly clay loam. Bedrock is at a depth of 17 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Reywat soil is moderately slow. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Reywat soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, Indian ricegrass, and Sandberg bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This soil is poorly suited to range seeding. The main limitation is the depth of this soil to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations of the soil are shallow depth to bedrock, stoniness, and steepness of slope.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

ReF—Reywat-Rock outcrop complex, 30 to 60 percent slopes. This map unit is on hillsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,600 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 70 percent Reywat very stony loam, 30 to 60 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Borvant cobbly loam, 8 to 25 percent slopes, and 2 percent Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans, and 3 percent Lodar very cobbly loam, 30 to 70 percent slopes, on hillsides. The percentage of these included soils varies from one area to another.

The Reywat soil is shallow and well drained. It formed in residuum derived dominantly from igneous rocks. Typically, the surface layer is brown very stony loam about 5 inches thick. The upper 4 inches of the subsoil is brown cobbly clay loam. The lower 8 inches is light yellowish brown very cobbly clay loam. Bedrock is at a depth of 17 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Reywat soil is moderately slow. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Reywat soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, Indian ricegrass, and Sandberg bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

This soil is poorly suited to range seeding. The main limitations are the depth of the soil to rock and slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are the shallow depth of the soil to bedrock, stoniness, steepness of slope, and Rock outcrop.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

RF—Rock outcrop. This map unit consists mainly of exposures of bedrock on very steep side slopes and vertical cliffs in the Mount Nebo area of the Wasatch Range.

About 10 percent of this unit consists of steep rubble land that is mostly barren of vegetation. In about 10 percent or less of the unit, a shallow layer of soil is on the bedrock. This soil is in crevices and on ledges and supports grasses and a few trees.

This unit is used for wildlife habitat and scenic value and as a watershed. Some of the less sloping areas are suited to hiking trails.

This map unit is in capability class VIII, nonirrigated.

RgF—Rock outcrop-Amtoft complex, 30 to 70 percent slopes. This map unit is on hillsides. Slopes are medium and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,200 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is 70 percent Rock outcrop and 20 percent Amtoft stony loam, 30 to 70 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Lodar very cobbly loam, 30 to 70 percent slopes, on north-facing hillsides; and 5 percent Saxby very cobbly loam, 30 to 70 percent slopes, on south-facing hillsides. The percentage of these included soils varies from one area to another.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

The Amtoft soil is shallow and somewhat excessively drained. It formed in residuum derived dominantly from sedimentary rocks. Typically, the surface layer is pale

brown stony loam about 5 inches thick. The underlying material is light gray very cobbly loam about 14 inches thick. Limestone is at a depth of 19 inches. Depth to limestone ranges from 10 to 20 inches.

Permeability of the Amtoft soil is moderately rapid. Available water capacity is about 1.5 to 2 inches. Water supplying capacity is 2 to 3 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is moderate.

This unit is used for wildlife habitat.

The potential plant community on the Amtoft soil is about 50 percent perennial grasses, 8 percent forbs, and 42 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Indian ricegrass, cliffrose, and needleandthread. The normal expected yield of total air-dried herbage is about 700 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Slope limits access by livestock and results in overgrazing of the less sloping areas. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Mechanical treatment is not practical, because the surface is stony and the slopes are steep.

This soil is very poorly suited to range seeding. The main limitations of the soil for seeding are slopes, Rock outcrop, and depth to rock.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

RhF—Rock outcrop-Lodar complex, 30 to 70 percent slopes. This map unit is on hillsides. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 70 percent Rock outcrop, and 20 percent Lodar very cobbly loam, 30 to 70 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Amtoft stony loam, moist, 30 to 70 percent slopes, and 5 percent Saxby very cobbly loam, moist, 30 to 70 percent slopes, both on south-facing hillsides. The percentage of these included soils varies from one area to another.

The Lodar soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, the surface layer is grayish brown very cobbly loam about 10 inches thick. The underlying material is pale brown very stony loam about 5 inches thick. Limestone is at a depth of about 15 inches, but depth to limestone ranges from 10 to 20 inches.

Permeability of the Lodar soil is moderate. Available water capacity is about 1 inch to 1.5 inches. Water supplying capacity is 1 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used for wildlife habitat.

The potential plant community on the Lodar soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, Sandberg bluegrass, and Indian ricegrass. Because of the steepness of slope and shallow depth of the soil, grazing management practices are poorly suited to this unit.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

RkF—Rock outcrop-Lundy complex, 30 to 70 percent slopes. This map unit is on mountainsides and hillsides. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,100 feet. The average annual precipitation is 14 to 18 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 70 percent Rock outcrop and 20 percent Lundy very cobbly loam, 30 to 70 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Lodar very cobbly loam, 30 to 70 percent slopes, on the lower parts of slopes, and 5 percent Agassiz very stony loam, 30 to 70 percent slopes, on the higher parts of slopes. The percentage of these included soils varies from one area to another.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

The Lundy soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone and sandstone. Typically, the surface layer is dark brown very cobbly loam about 6 inches thick. The underlying material is pale brown very cobbly loam about 13 inches thick. Limestone is at a depth of about 19 inches, but the depth to limestone ranges from 10 to 20 inches.

Permeability of the Lundy soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used for wildlife habitat.

The potential plant community on the Lundy soil is about 65 percent perennial grasses, 3 percent forbs, 7 percent shrubs, and 25 percent trees. Important plant species are bluebunch wheatgrass, Utah juniper, Indian ricegrass, and black sagebrush. The normal expected yield of total air dry herbage is about 1,500 pounds per acre. Because the soil is steep and shallow to bedrock, grazing management practices are poorly suited to this unit.

This map unit is in capability unit VIIs-U3J. The range site is Upland Shallow Loam (Juniper).

RmF—Rock outcrop-Saxby complex, 30 to 70 percent slopes. This map unit is on hillsides. Slopes are medium in length and are convex. In most areas the present vegetation in mainly grasses and shrubs. Elevation is 4,800 to 6,800. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

This unit is about 70 percent Rock outcrop, and 20 percent Saxby very cobbly loam, 30 to 70 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Lodar very cobbly loam, 30 to 70 percent slopes, and 5 percent Amtoft stony loam, 30 to 70 percent slopes, both on north-facing hillsides. The percentage of these included soils varies from one area to another.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

The Saxby soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from sedimentary and igneous rocks. Typically, the surface layer is pale brown very cobbly loam about 6 inches thick. The underlying material is light yellowish brown extremely cobbly loam about 12 inches thick. Sandstone is at a depth of 18 inches. Depth to sandstone ranges from 10 to 20 inches.

Permeability of the Saxby soil is moderate. Available water capacity is 1 inch to 2 inches. Water supplying capacity is 3 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used for wildlife habitat.

The potential plant community on the Saxby soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are Indian ricegrass, bluebunch wheatgrass, black sagebrush, and Douglas rabbitbrush. Because the soil is steep and shallow, grazing or management practices are poorly suited to this site.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

RnF—Rock outcrop-Sheep Creek complex, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,800 to 8,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 40 percent Rock outcrop and 30 percent Sheep Creek very cobbly loam, 30 to 70 percent slopes. The Rock outcrop is mainly on ridges and cliffs, and the Sheep Creek soil is mainly on south- and west-facing side slopes that are between ridges and cliffs. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 15 percent Parkay very stony loam, 30 to 70 percent slopes, and Lundy very cobbly loam, 30 to 70 percent slopes, which are in shallow areas on mountainsides. The percentage of these included soils varies from one area to another.

Rock outcrop consists of exposed barren rock, mainly on escarpments and ridges.

The Sheep Creek soil is moderately deep and well drained. It formed in residuum and colluvium derived dominantly from conglomerate and limestone. Typically, the surface layer is dark brown very cobbly loam about 8 inches thick. The subsoil is brown very cobbly clay loam about 9 inches thick. The substratum is reddish yellow very gravelly sandy loam about 11 inches thick. Conglomerate is at a depth of 28 inches. Depth to conglomerate ranges from 20 to 40 inches.

Permeability of this Sheep Creek soil is moderate. Available water capacity is about 2.5 to 3.5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used for wildlife habitat.

The potential plant community on the Sheep Creek soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,000 pounds per acre. Because the soil is steep and shallow, grazing management practices are poorly suited to this unit.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, moderate depth to bedrock, and the Rock outcrop.

This map unit is in capability unit VIIe-M3, nonirrigated. The range site is Mountain Stony Loam.

RoF—Rock outcrop-Wallsburg complex, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are medium in length. In places they are convex.

In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 65 percent Rock outcrop and 25 percent Wallsburg very cobbly loam, 30 to 70 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit is about 10 percent Yeates Hollow very stony loam, 25 to 40 percent slopes, on alluvial fans. The percentage of this included soil varies from one area to another.

Rock outcrop consists of exposures of bedrock on escarpments and ridges.

The Wallsburg soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from quartzite and igneous rocks. Typically, the surface layer is dark grayish brown very cobbly loam about 10 inches thick. The subsoil is pale brown very gravelly clay about 9 inches thick. Bedrock is at a depth of 19 inches. Depth to bedrock ranges from 10 to 20 inches.

Permeability of the Wallsburg soil is moderately slow. Available water capacity is about 1 to 2 inches. Water supplying capacity is 4 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used for wildlife habitat.

The potential plant community on the Wallsburg soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, basin wildrye, muttongrass, antelope bitterbrush, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,100 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This soil is poorly suited to range seeding. The main limitations of the soil are slope and depth to rock.

This map unit is in capability unit VIIs-M3, nonirrigated. The range site is Mountain Shallow Loam.

RpD—Rofiss gravelly clay loam, 4 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from shale. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,100 to 5,500 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown gravelly clay loam about 12 inches thick. Below this to a depth of 60 inches or more is light gray very gravelly clay loam to extremely gravelly clay loam.

Included in this unit are about 5 percent Donnardo stony loam, 2 to 8 percent slopes, on alluvial fans, and 5 percent Xeric Torriorthents, 30 to 70 percent slopes, on hillsides. The percentage of these included soils varies from one area to another.

Permeability of this Rofiss soil is moderately slow. Available water capacity is 3.5 to 7 inches. Water supplying capacity is 6.5 to 8 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat and irrigated pasture.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, muttongrass, needleandthread, Nevada bluegrass, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 975 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for hay and pasture, the main limitations are the high content of gravel and the strong alkalinity of the soil.

If this unit is used for recreation or homesite development, the main limitations are small stones and slope. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This unit is in capability units IVs-24, irrigated, and VIs-U4, nonirrigated. The range site is Upland Stony Loam.

Rr—Roshe Springs silt loam. This very deep, poorly drained soil is on flood plains and lake plains. The soil formed in alluvium and lake sediment derived dominantly

from sedimentary rocks. Slopes are 0 to 1 percent, are medium in length, and are concave. In most areas the present vegetation is mainly wet meadow grass. Elevation is 4,485 to 5,100 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is gray silt loam about 9 inches thick. Below this to a depth of 60 inches or more is light gray and gray loam.

Included in this unit are about 10 percent Provo Bay silt loam, on low lake terraces; 5 percent Saltair silt loam, on lake plains; and 8 percent Bramwell silt loam, on both lake plains and low lake terraces. The percentage of the included soils varies from one area to another.

Permeability of this Roshe Springs soil is moderate. Available water capacity is about 10 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is ponded, and the hazard of water erosion is slight. A seasonal high water table is at a depth of 0 to 24 inches during the spring and summer months. These soils are occasionally flooded in the spring.

This unit is used as rangeland and for wildlife habitat and wet meadow hay.

The potential plant community on this soil is about 95 percent perennial grasses, 3 percent forbs, and 2 percent shrubs. Important plant species are sedges, tufted hairgrass, and rush. The normal expected yield of total air-dried herbage is about 4,000 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sedges may develop as a result of continuous overgrazing.

This unit is well suited to range seeding. Plants suitable for seeding include timothy and species of the potential plant community for which seed or stock is available.

If this unit is used for hay and pasture, the main limitations are the hazard of flooding and wetness.

This map unit is in capability unit Vw-22, nonirrigated. The range site is Wet Meadow.

RS—Rubble land. This map unit consists mainly of talus slopes, rock rubble, and Rock outcrop on very steep side slopes. The main limitations of this unit are very steep slopes, rockiness, and the climate. Some isolated pockets of soils support sparse vegetation.

This unit is used for wildlife habitat.

This map unit is in capability class VIII.

Sa—Saltair silt loam. This very deep, poorly drained soil is on lake plains. It formed in lake sediment derived dominantly from sedimentary rocks. Slopes are 0 to 1 percent and are short and concave. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,485 to 5,100 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is gray silt loam about 7 inches thick. Below this to a depth of 60 inches or more is mainly light brownish gray silty clay loam. This soil is strongly affected by salt.

Included in this unit are about 5 percent Manassa silt loam, 0 to 2 percent slopes, on alluvial plains; 5 percent Roshe Springs silt loam, on flood plains; and 5 percent Beaches. The percentage of these inclusions varies from one area to another.

Permeability of this Saltair soil is slow. Available water capacity is about 1 inch to 5 inches. Effective rooting depth is 12 to 24 inches. The organic matter content of the surface layer is 0 to 1 percent. Runoff is slow to ponded, and the hazard of water erosion is slight. A seasonal high water table is at a depth of 0 to 12 inches during the spring and summer months. These soils are frequently flooded.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 88 percent perennial grasses, 2 percent forbs, and 10 percent shrubs. Important plant species are pickleweed, samphire, rush, and black greasewood. The normal expected yield of total air-dried herbage is about 200 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of inland saltgrass may develop as a result of continuous overgrazing.

This unit is very poorly suited to range seeding. The main limitation is the content of salt and alkali.

This unit is poorly suited to recreational uses and homesite development. The main limitations are the content of salt, slow permeability, and wetness.

This map is in capability unit VIIIw-28, nonirrigated. The range site is Salty Silt.

SbF—Sandall very cobbly loam, 25 to 60 percent slopes. This moderately deep, well drained soil is on hillsides. It formed in colluvium and residuum derived dominantly from limestone, quartzite, sandstone, and igneous rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very cobbly loam about 5 inches thick. The subsoil is very pale brown very cobbly loam about 10 inches thick. The substratum is very strongly calcareous white very cobbly loam and very pale brown very gravelly loam about 17

inches thick. Conglomerate is at a depth of 32 inches. The depth to conglomerate ranges from 20 to 40 inches.

Included in this unit are about 5 percent Borvant cobbly loam, 8 to 25 percent slopes, and 5 percent Pharo very stony loam that has slopes of more than 10 percent, both on alluvial fans. Amtoft stony loam, 30 to 70 percent slopes, on hillsides, and Rock outcrop each make up 5 percent of this unit. The percentage of these included soils varies from one area to another.

Permeability of this Sandall soil is moderate. Available water capacity is about 2.5 to 4 inches. Water supplying capacity is 4.5 to 6.5 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are Utah juniper, bluebunch wheatgrass, Wyoming big sagebrush, muttongrass, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 1,125 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas.

This unit is poorly suited to range seeding. The main limitation is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations of this soil are stoniness, slope, and moderate depth to bedrock.

This map unit is in capability unit VIIs-UXJ, nonirrigated. The range site is Upland Stony Loam (Juniper).

ScD—Sanpete gravelly fine sandy loam, 4 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, shale, and sandstone. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,600 to 5,300 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown gravelly and very gravelly fine sandy loam about 12 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, very pale brown very gravelly fine sandy loam.

Included in this unit are about 5 percent Sanpete gravelly fine sandy loam, 15 to 40 percent slopes; 5 percent Hiko Peak stony sandy loam, 8 to 15 percent slopes; 5 percent Spager gravelly loam, 4 to 15 percent slopes; and 5 percent Medburn fine sandy loam, 2 to 4 percent slopes. These inclusions are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of this Sanpete soil is moderately rapid. Available water capacity is about 3 to 5.5 inches. Water supplying capacity is 5 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and needleandthread. The normal expected yield of total air-dried herbage is about 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. The main limitations are low precipitation, the content of rock fragments, and slope. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations of this soil are slope and small stones.

This map unit is in capability unit VIIs-S4, nonirrigated. The range site is Semidesert Stony Loam.

ScF—Sanpete gravelly fine sandy loam, 15 to 40 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone, shale, and sandstone. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,600 to 5,300 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown gravelly and very gravelly fine sandy loam about 12 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, very pale brown very gravelly fine sandy loam.

Included in this unit are about 5 percent Sanpete gravelly fine sandy loam, 4 to 15 percent slopes; 5 percent Hiko Peak stony sandy loam, 15 to 25 percent slopes; 5 percent Spager gravelly loam, 4 to 15 percent slopes; and 5 percent Medburn fine sandy loam, 2 to 4 percent slopes. These inclusions are on alluvial fans. The percentage varies from one area to another.

Permeability of this Sanpete soil is moderately rapid. Available water capacity is about 3 to 5.5 inches. Water

supplying capacity is 5 to 6 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and needleandthread. The normal expected yield of total air-dried herbage is 600 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, this soil may be subject to a higher hazard of erosion.

This unit is very poorly suited to range seeding. The main limitations are low precipitation, steepness of slope, and the content of rock fragments.

If this unit is used for recreation or homesite development, the main limitations are slope and small stones.

This map unit is in capability unit VIIs-S4, nonirrigated. The range site is Semidesert Stony Loam.

SdE—Saxby-Rock outcrop complex, 10 to 30 percent slopes. This map unit is on hillsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs (fig. 16). Elevation is 4,800 to 6,000 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 70 percent Saxby very cobbly loam, 10 to 30 percent slopes, and 15 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Saxby very cobbly loam, 30 to 70 percent slopes, and 5 percent Amtoft stony loam, 8 to 30 percent slopes, on hillsides, and 5 percent Hiko Peak stony loam, 8 to 15 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Saxby soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from igneous rocks, quartzite, and sandstone. Typically, the surface layer is pale brown very cobbly loam about 6 inches thick. The subsoil and substratum are light yellowish brown extremely cobbly loam about 12 inches thick. Sandstone is at a depth of 18 inches. The depth to sandstone ranges from 10 to 20 inches.

Permeability of the Saxby soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Saxby soil is about 50 percent perennial grasses, 8 percent forbs, and 42 percent shrubs. Important plant species are Indian ricegrass, bluebunch wheatgrass, black sagebrush, and Douglas rabbitbrush. The normal expected yield of total air-dried herbage is about 625 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Utah juniper may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This soil is very poorly suited to range seeding. The main limitations are depth of the soil to rock and slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness, slope, and shallow depth to bedrock.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

SdF—Saxby-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on hillsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,000 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 70 percent Saxby very cobbly loam, 30 to 70 percent slopes, and 15 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Saxby very cobbly loam, 10 to 30 percent slopes, and 5 percent Amtoft stony loam, 30 to 70 percent slopes, both on hillsides, and 5 percent Hiko Peak stony sandy loam, 15 to 25 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Saxby soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from igneous rocks, quartzite, and sandstone. Typically, the surface layer is pale brown very cobbly loam about 6 inches thick. The subsoil and substratum

are light yellowish brown extremely cobbly loam about 12 inches thick. Sandstone is at a depth of about 18 inches, but depth to sandstone ranges from 10 to 20 inches.

Permeability of the Saxby soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Saxby soil is about 50 percent perennial grasses, 8 percent forbs, and 42 percent shrubs. Important plant species are Indian ricegrass, bluebunch wheatgrass, Douglas rabbitbrush, and black sagebrush. The normal expected yield of total air-dried herbage is about 625 pounds per acre. Because the soil is steep and shallow, grazing management practices are poorly suited to this unit.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope, stoniness, and shallow depth to bedrock.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.



Figure 16.—Saxby-Rock outcrop complex, 10 to 30 percent slopes, foreground. Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes, middle ground, and the Little Sahara Recreation Area, background.

SeB—Saxby, moist-Rock outcrop complex, 10 to 30 percent slopes. This map unit is on hillsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,800 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 70 percent Saxby very cobbly loam, moist, 10 to 30 percent slopes, and 15 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Saxby very cobbly loam, moist, 30 to 70 percent slopes, and 5 percent Amtoft stony loam, moist, 8 to 30 percent slopes, both on hillsides, and 5 percent Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Saxby soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from igneous rocks, quartzite, and sandstone. Typically, the surface layer is pale brown very cobbly loam about 6 inches thick. The subsoil and substratum are light yellowish brown extremely cobbly loam about 12 inches thick. Sandstone is at a depth of 18 inches. The depth to sandstone ranges from 10 to 20 inches.

Permeability of the Saxby soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Saxby soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, Indian ricegrass, and Sandberg bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can be used to improve deteriorated range if at least 15 percent of the desirable plants still remain.

This soil is poorly suited to range seeding. The main limitations are depth to rock and slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness, slope, shallow depth to bedrock, and Rock outcrop.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

SeF—Saxby, moist-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on hillsides. Slopes are medium and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,800 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 70 percent Saxby very cobbly loam, moist, 30 to 70 percent slopes, and 15 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Saxby very cobbly loam, moist, 10 to 30 percent slopes, and 5 percent Amtoft stony loam, moist, 30 to 70 percent slopes, both on hillsides, and 5 percent Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Saxby soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from igneous rocks, quartzite, and sandstone. Typically, the surface layer is pale brown very cobbly loam about 6 inches thick. The subsoil and substratum are light yellowish brown extremely cobbly loam about 12 inches thick. Sandstone is at a depth of 18 inches. The depth to sandstone ranges from 10 to 20 inches.

Permeability of the Saxby soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 3 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this Saxby soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, Indian ricegrass, and Sandberg bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve

deteriorated range if at least 15 percent of the desirable plants still remain.

This soil is poorly suited to range seeding. The main limitations of the soil are depth to rock and slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, stoniness, shallow depth to bedrock, and Rock outcrop.

This map unit is in capability unit VIIs-U3. The range site is Upland Shallow Loam.

SfC—Shabliss very fine sandy loam, 2 to 5 percent slopes. This shallow, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from sedimentary and igneous rocks. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,700 to 5,300 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very fine sandy loam about 4 inches thick. The subsoil is very pale brown very fine sandy loam about 11 inches thick. The next layer is pink loam and 80 percent or more cemented silica and carbonate cemented durinodes. This layer is about 25 inches thick. Below it to a depth of 60 inches or more is pink loam. The depth to the cemented layer ranges from 10 to 20 inches.

Included in this unit are about 5 percent Shabliss very fine sandy loam, 5 to 15 percent slopes; 4 percent Medburn fine sandy loam, 2 to 4 percent slopes; 3 percent Spager gravelly loam, 4 to 15 percent slopes; and 3 percent Truesdale fine sandy loam, 2 to 4 percent slopes. These included soils are on alluvial fans and lake terraces. The percentage of these soils varies from one area to another. Also included are small areas of a soil, near the Sevier Bridge Reservoir, which is similar to this Shabliss soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Shabliss soil is moderate to the cemented layer and very slow in the cemented layer. Available water capacity is about 2 to 3 inches. Water supplying capacity is 3.5 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, black sagebrush, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitation of the soil is depth to the strongly cemented silica layer.

This unit is poorly suited to irrigated crops. The main limitation is the shallow depth of this soil to the cemented layer. Precipitation in summer is not sufficient for nonirrigated crops.

If this unit is used for recreation or homesite development, the main limitation is the shallow depth of the soil to the cemented layer. This layer is rippable; therefore, it is not a serious limitation for most engineering uses.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

SfD—Shabliss very fine sandy loam, 5 to 15 percent slopes. This shallow, well drained soil is on alluvial fans and lake terraces. It formed in alluvium and lake sediment derived dominantly from sedimentary and igneous rocks. Slopes are long and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,700 to 5,300 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very fine sandy loam about 4 inches thick. The subsoil is very pale brown very fine sandy loam about 11 inches thick. The next layer is pink loam and 80 percent or more cemented silica and carbonate cemented durinodes. This layer is about 25 inches thick. Below it to a depth of 60 inches or more is pink loam. Depth to the cemented layer ranges from 10 to 20 inches.

Included in this unit are about 10 percent Shabliss very fine sandy loam, 2 to 5 percent slopes; 4 percent Spager gravelly loam, 4 to 15 percent slopes; and 2 percent Hiko Peak stony sandy loam, 8 to 15 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another. Also included are small areas of a soil, near the Sevier Bridge Reservoir, which is similar to the Shabliss soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Shabliss soil is moderate to the cemented layer and very slow in the cemented layer. Available water capacity is about 2 to 3 inches. Water supplying capacity is 3.5 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 10 percent forbs, and 40

percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, black sagebrush, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of desirable plants still remain.

This unit is poorly suited to range seeding. The main limitation is depth of the soil to a cemented layer.

This unit is poorly suited to irrigated crops. The main limitation is shallow depth to the cemented silica layer. Precipitation in summer is not sufficient for nonirrigated crops.

If this unit is used for recreation or homesite development, the main limitations are the shallow depth to the cemented layer and the slope. This layer is rippable; therefore, it is not a serious limitation for most engineering uses.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

SfE—Shabliss very fine sandy loam, 15 to 30 percent slopes. This shallow, well drained soil is on alluvial fans and lake terraces. It formed in alluvium and lake sediment derived dominantly from sedimentary and igneous rocks. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,700 to 5,300 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very fine sandy loam about 4 inches thick. The subsoil is very pale brown very fine sandy loam about 11 inches thick. The next layer is pink loam and 80 percent or more cemented silica and carbonate cemented durinodes. This layer is about 25 inches thick. Below it to a depth of 60 inches or more is pink loam. The depth to the cemented layer ranges from 10 to 20 inches.

Included in this unit are about 10 percent Shabliss very fine sandy loam, 5 to 15 percent slopes; 4 percent Spager gravelly loam, 4 to 15 percent slopes; and 4 percent Hiko Peak stony sandy loam, 8 to 15 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another. Also included are small areas of a soil, near the Sevier Reservoir, which is similar to the Shabliss soil except it receives 8 to 10 inches of precipitation annually.

Permeability of this Shabliss soil is moderate to the cemented layer and very slow in the cemented layer. Available water capacity is about 2 to 3 inches. Water supplying capacity is 3.5 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, black sagebrush, and Nevada bluegrass. The normal expected yield of total air-dried herbage is abot 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitations of the soil are depth to the cemented layer and slope.

This unit is poorly suited to irrigated crops. The main limitation is shallow depth of the soil to the cemented layer. Precipitation in summer is not sufficient for nonirrigated crops.

If this unit is used for recreation or homesite development, the main limitations are the shallow depth to the cemented layer and the slope. This layer is rippable; therefore, it is not a serious limitation for most engineering uses.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

SgC—Shabliss very fine sandy loam, moist, 2 to 5 percent slopes. This shallow, well drained soil is on alluvial fans and lake terraces. It formed in alluvium and lake sediment derived dominantly from sedimentary and igneous rocks. Slopes are long and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,000 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown very fine sandy loam about 4 inches thick. The subsoil is very pale brown very fine sandy loam about 11 inches thick. The next layer is pink loam and 80 percent or more cemented silica and carbonate cemented durinodes. This layer is about 25 inches thick. Below it to a depth of 60 inches or more is pink loam. The depth to the cemented layer ranges from 10 to 20 inches.

Included in this unit are about 7 percent Borvant cobbly loam, 2 to 8 percent slopes; 5 percent Juab loam, 2 to 4 percent slopes; and 4 percent Donnardo stony loam, 2 to 8 percent slopes. These included soils are on alluvial fans. The percentage of this soil varies from one area to another.

Permeability of this Shabliss soil is moderate to the cemented layer and very slow in the cemented layer. Available water capacity is about 2 to 3 inches. Water supplying capacity is 3.5 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, Sandberg bluegrass, black sagebrush, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 750 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitation is the depth of this soil to the cemented layer.

This unit is poorly suited to irrigated crops. The main limitation of the soil is the shallow depth to the cemented layer. Precipitation in summer is not sufficient for nonirrigated crops.

If this unit is used for recreation or homesite development, the main limitation is the shallow depth of this soil to the cemented layer. This layer is rippable; therefore, it is not a serious limitation for most engineering uses.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Shallow Loam.

ShE—Sheep Creek very cobbly loam, 10 to 30 percent slopes. This moderately deep, well drained soil is on mountainsides. It formed in residuum and colluvium derived dominantly from conglomerate and limestone. Slopes are long and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,200 to 7,200 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark brown very cobbly loam about 8 inches thick. The subsoil is brown very cobbly clay loam about 9 inches thick. The substratum is reddish yellow very gravelly sandy loam about 11 inches thick. Conglomerate is at a depth of about 28 inches. The depth to conglomerate ranges from 20 to 40 inches.

Included in this unit are about 8 percent Sheep Creek very cobbly loam, 30 to 70 percent slopes, and 5 percent Bezzant gravelly loam, 6 to 30 percent slopes, on mountainsides. The Yeates Hollow very stony loam, 10 to 25 percent slopes, on hillsides, makes up 6 percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Sheep Creek soil is moderate. Available water capacity is 2.5 to 3.5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitations of the soil are slope and depth to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope and moderate depth to bedrock.

This map unit is in capability unit VIe-M3, nonirrigated. The range site is Mountain Stony Loam.

ShF—Sheep Creek very cobbly loam, 30 to 70 percent slopes. This moderately deep, well drained soil is on mountainsides. It formed in residuum and colluvium derived dominantly from conglomerate and limestone. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,200 to 7,200 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark brown very cobbly loam about 8 inches thick. The subsoil is brown very cobbly clay loam about 9 inches thick. The substratum is reddish yellow very gravelly sandy loam about 11 inches thick. Conglomerate is at a depth of about 28 inches. The depth to conglomerate ranges from 20 to 40 inches.

Included in this unit are about 10 percent Sheep Creek very cobbly loam, 10 to 30 percent slopes, and 5 percent Bezzant gravelly loam, 30 to 60 percent slopes, on mountainsides. The Yeates Hollow very stony loam, 25 to 40 percent slopes, on alluvial fans, also makes up 5 percent of this unit. The percentage varies from one area to another.

Permeability of this Sheep Creek soil is moderate. Available water capacity is about 2.5 to 3.5 inches.

Water supplying capacity is 6 to 8 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing.

This unit is poorly suited to range seeding. The main limitation is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope and moderate depth of the soil to bedrock.

This map unit is in capability unit VIIe-M3, nonirrigated. The range site is Mountain Stony Loam.

SkF—Sheep Creek very cobbly loam, dry, 30 to 70 percent slopes. This moderately deep, well drained soil is on hillsides. It formed in residuum and colluvium derived dominantly from limestone and conglomerate. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,000 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark brown very cobbly loam about 8 inches thick. The subsoil is brown very cobbly clay loam about 9 inches thick. The substratum is reddish yellow very gravelly sandy loam about 11 inches thick. Conglomerate is at a depth of about 28 inches. The depth to conglomerate ranges from 20 to 40 inches.

Included in this unit are about 5 percent Bezzant gravelly loam, dry, 30 to 60 percent slopes; 4 percent Amtoft stony loam, moist, 30 to 70 percent slopes; and 4 percent Lodar very cobbly loam, 30 to 70 percent slopes, on hillsides. Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans, makes up 2 percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Sheep Creek soil is moderate. Available water capacity is about 2.5 to 3.5 inches. Water supplying capacity is 6 to 8 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Nevada bluegrass, muttongrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 975 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitation is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope and moderate depth to bedrock.

This map unit is in capability subclass VIIe-U3, nonirrigated. The range site is Upland Stony Loam.

SmE—Sheep Creek-Flygare complex, 8 to 30 percent slopes. This map unit is on mountainsides. Slopes are south-facing, short to medium, and convex or concave. In most areas the present vegetation is mainly grasses, shrubs, and aspen trees. Elevation is 7,000 to 9,000 feet. The average annual precipitation is about 16 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the freeze-free season is 30 to 110 days.

This unit is about 40 percent Sheep Creek very cobbly loam, 10 to 30 percent slopes, south facing, and 35 percent Flygare loam, 8 to 30 percent slopes, north facing. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Sheep Creek very cobbly loam, 30 to 70 percent slopes, on south-facing slopes, and 10 percent Flygare loam, 30 to 70 percent slopes. Rock outcrop, on ridges and escarpments, makes up 5 percent of the unit. The percentage of these included soils varies from one area to another.

The Sheep Creek soil is moderately deep and well drained. It formed in residuum and colluvium derived dominantly from conglomerate and limestone. Typically, the surface layer is dark brown very cobbly loam about 8 inches thick. The subsoil is brown very cobbly clay loam about 9 inches thick. The substratum is reddish yellow very gravelly sandy loam about 11 inches thick. Conglomerate is at a depth of 28 inches. The depth to conglomerate ranges from 20 to 40 inches.

Permeability of this Sheep Creek soil is moderate. Available water capacity is about 2.5 to 3.5 inches.

Water supplying capacity is 6 to 8 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

The Flygare soil is very deep and well drained. It formed in colluvium derived dominantly from limestone, quartzite, and sandstone. Typically, the surface layer is very dark grayish brown loam about 20 inches thick. The subsurface layer is light brownish gray very cobbly loam about 11 inches thick. The upper part of the subsoil is pale brown very gravelly clay loam about 18 inches thick. The lower part to a depth of 60 inches or more is light yellowish brown extremely cobbly loam.

Permeability of this Flygare soil is moderate. Available water capacity is about 5 to 7.5 inches. Water supplying capacity is 9 to 16 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for woodland grazing and wildlife habitat.

The potential plant community on the Sheep Creek soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Sheep Creek soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This Sheep Creek soil is suited to range seeding. The main limitations are moderate depth of the soil and the small size of areas of the soil.

Potential vegetation on the Flygare soil is quaking aspens and an understory of mountain brome, nodding bromegrass, blue wildrye, bearded wheatgrass, sweet-anise, and some aspen peavine. The composition of the potential vegetation changes because of overgrazing by livestock or wildlife or because of other disturbances. Some plants increase; others decrease. Proper grazing is an important management practice for maintaining adequate plant cover and desired composition.

This Flygare soil is suited to quaking aspen for wood products. It is capable of producing about 2,500 cubic feet per acre, or 11,000 broad feet (Scribner rule), of merchantable timber from a fully stocked, even-aged stand of 80-year-old trees. Plant competition delays the regeneration of quaking aspen but does not prevent the eventual development of a fully stocked, normal stand of trees. Using conventional methods of harvesting trees is difficult because of the slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness, moderate depth to bedrock, and steepness of slope in some areas.

This map unit is in capability unit VIIe-HA, nonirrigated. The Sheep Creek soil is in the Mountain Stony Loam range site.

SN—Slickens. This map unit consists of areas where fine textured material separated in mining operations has accumulated. Slickens from ore mills consist mainly of freshly ground rock that generally has undergone chemical treatment during the milling process. Because this rock contains arsenic and other toxic substances, this unit is nearly barren of vegetation. It is severely limited for most uses.

This map unit is in capability class VIII.

SoD—Spager gravelly loam, 4 to 15 percent slopes. This shallow, somewhat excessively drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from limestone. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,600 to 5,600 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown gravelly loam about 4 inches thick. The underlying material is very pale brown very gravelly loam about 13 inches thick. A lime cemented hardpan, 8 inches thick, is at a depth of 17 inches. Depth to the hardpan ranges from 10 to 20 inches. Below this to a depth of 60 inches or more are stratified layers of very gravelly loam and indurated hardpans.

Included in this unit are about 6 percent Jericho gravelly fine sandy loam, 4 to 15 percent slopes, on alluvial fans; 4 percent Spager gravelly loam, 4 to 15 percent slopes, on alluvial fans; 4 percent Hiko Peak stony sandy loam, 8 to 15 percent slopes, on alluvial fans; 3 percent Sandall very cobbly loam, 25 to 60 percent slopes, on hillsides; and 2 percent Wales loam, dry, 2 to 4 percent slopes, in drainageways. The percentage of these included soils varies from one area to another.

Permeability of this Spager soil is moderately rapid. Available water capacity is 1.5 to 2 inches. Water supplying capacity is 3 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch

wheatgrass, Indian ricegrass, Nevada bluegrass, Sandberg bluegrass, and black sagebrush. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitation is the depth of the soil to the hardpan.

This unit is poorly suited to recreational uses and homesite development. The main limitations are small stones and the shallow depth to the hardpan.

This map unit is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Shallow Loam.

SpE—Starley-Rock outcrop complex, 8 to 30 percent. This map unit is on mountainsides. Slopes are short and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 8,000 to 9,000 feet. The average annual precipitation is 22 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

This unit is about 60 percent Starley very cobbly loam, 3 to 30 percent slopes, on mountainsides, and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Flygare loam, 8 to 30 percent slopes, on concave mountainsides, and 5 percent Parkay very stony loam, 8 to 30 percent slopes, on north-facing mountainsides. The percentage of these included soils varies from one area to another.

The Starley soil is shallow and excessively drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, the surface layer is dark grayish brown very cobbly loam about 16 inches thick. The underlying material is brown very cobbly loam about 3 inches thick. Limestone is at a depth of 19 inches. The depth to limestone ranges from 10 to 20 inches.

Permeability of the Starley soil is moderate. Available water capacity is about 0.5 inch to 1.5 inches. Water supplying capacity is 4 to 8 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Starley soil is about 55 percent perennial grasses, 25 percent forbs, and 20 percent shrubs. Important plant species are slender wheatgrass, bearded wheatgrass, Kentucky bluegrass, and low sagebrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the potential plant community include proper grazing use and a planned grazing system.

This soil is poorly suited to range seeding. The main limitation is depth to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations of the soil are stoniness and shallow depth to bedrock.

This map unit is in capability unit VIIs-H3, nonirrigated. The range site is Mountain Shallow Loam.

SpF—Starley-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are short and convex or concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 7,400 to 11,650 feet. The average annual precipitation is 22 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

This unit is about 45 percent Starley very cobbly loam, 30 to 70 percent slopes, on mountainsides, and 40 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Agassiz very stony loam, 30 to 70 percent slopes, on the lower parts of mountainsides; 5 percent Flygare loam, 30 to 70 percent slopes, on concave mountainsides; and 5 percent Parkay very stony loam, 30 to 70 percent slopes, on north-facing mountainsides. The percentage of these included soils varies from one area to another.

The Starley soil is shallow and excessively drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is dark grayish brown very cobbly loam about 16 inches thick. The underlying material is brown very cobbly loam about 3 inches thick. Limestone is at a depth of 19 inches. The depth to limestone ranges from 10 to 20 inches.

Permeability of the Starley soil is moderate. Available water capacity is about 0.5 inch to 1.5 inches. Water supplying capacity is 4 to 8 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as range and for wildlife habitat.

The potential plant community on the Starley soil is about 55 percent perennial grasses, 25 percent forbs, and 20 percent shrubs. Important plant species are slender wheatgrass, bearded wheatgrass, Kentucky bluegrass, and low sagebrush. The normal expected yield of total air-dried herbage is about 1,400 pounds per acre.

Management practices needed to maintain or improve the potential plant community include proper grazing use and a planned grazing system.

This soil is poorly suited to range seeding. The main limitations are slope and depth of the soil to rock. Slope limits access by livestock and results in overgrazing of the less sloping areas.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope and shallow depth to bedrock.

This map unit is in capability unit VIIs-H3, nonirrigated. The range site is Mountain Shallow Loam.

SrE—Sumine very cobbly loam, 10 to 30 percent slopes. This moderately deep, well drained soil is on hillsides and mountainsides. The soil formed in alluvium and colluvium derived dominantly from igneous rocks. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,900 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is dark grayish brown very cobbly loam and very cobbly clay loam about 5 inches thick. The subsoil is brown and yellowish brown very cobbly clay loam and very gravelly clay loam about 21 inches thick. Bedrock is at a depth of 26 inches. The depth to bedrock ranges from 20 to 40 inches.

Included in this unit are about 5 percent Reywat very stony loam, 10 to 30 percent slopes, and 5 percent Sumine very cobbly loam, 30 to 60 percent slopes, on hillsides; 5 percent Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans; and 5 percent Reebok cobbly loam, 4 to 15 percent slopes, on both alluvial fans and hillsides. The percentage of these included soils varies from one area to another.

Permeability of this Sumine soil is moderate. Available water capacity is about 2 to 3 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, muttongrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 975 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are slope and shallow depth of the soil to bedrock.

This map unit is in capability unit VIIs-U3, nonirrigated. The range site is Upland Stony Loam.

SsE—Sumine-Reywat-Rock outcrop complex, 10 to 30 percent slopes. This map unit is on hillsides and mountainsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,600 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 41 to 52 degrees F, and the average freeze-free season is 70 to 140 days.

This unit is about 35 percent Sumine very cobbly loam, 10 to 30 percent slopes; 30 percent Reywat very stony loam, 10 to 30 percent slopes; and 15 percent Rock outcrop. The Sumine soil is on north- and east-facing slopes, the Reywat soil is on south- and west-facing slopes, and the Rock outcrop is on ridges and escarpments. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 8 percent Sumine and Reywat soils, on hillsides; 4 percent Renol stony fine sandy loam, 4 to 8 percent slopes, and 4 percent Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans; and 4 percent Reebok cobbly loam, 4 to 15 percent slopes, on both alluvial fans and hillsides. Rock crops out on slopes of 30 to 60 percent. The percentage of these inclusions varies from one area to another.

The Sumine soil is moderately deep and well drained. It formed in alluvium and colluvium derived dominantly from igneous rocks. Typically, the surface layer is dark grayish brown very cobbly loam and very cobbly clay loam about 5 inches thick. The subsoil is brown and yellowish brown very cobbly clay loam and very gravelly clay loam about 21 inches thick. Igneous bedrock is at a depth of 26 inches. The depth to bedrock ranges from 20 to 40 inches.

Permeability of the Sumine soil is moderate. Available water capacity is about 2 to 3 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

The Reywat soil is shallow and well drained. It formed in residuum derived dominantly from igneous rocks. Typically, the surface layer is brown very stony loam about 5 inches thick. The upper 4 inches of the subsoil is brown cobbly clay loam. The lower 8 inches is light yellowish brown very cobbly clay loam. Bedrock is at a depth of 17 inches. The depth to bedrock ranges from 10 to 20 inches.

Permeability of the Reywat soil is moderately slow. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Sumine soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, muttongrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 975 pounds per acre.

Management practices needed to maintain or improve vegetation on the Sumine soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This Sumine soil is suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, slender wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

The potential plant community on the Reywat soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, Indian ricegrass, and Sandberg bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve vegetation on the Reywat soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This Reywat soil is suited to range seeding. The main limitations are depth to rock and Rock outcrop.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope, depth to bedrock, and Rock outcrop.

This map unit is in capability unit VIIs-U3, nonirrigated. The Sumine soil is in Upland Stony Loam range site, and the Reywat soil is in Upland Shallow Loam range site.

SsF—Sumine-Reywat-Rock outcrop complex, 30 to 60 percent slopes. This map unit is on hillsides and mountainsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,600 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 52 degrees F, and the freeze-free season is 70 to 140 days.

This unit is about 35 percent Sumine very cobbly loam, 30 to 60 percent slopes; 30 percent Reywat very stony loam, 30 to 60 percent slopes; and 20 percent Rock outcrop. The Sumine soil is on north- and east-facing slopes, the Reywat soil is on south- and-west facing slopes, and the Rock outcrop is on ridges and escarpments. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Sumine and Reywat soils, on hillsides; 5 percent Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans; and 5 percent Reebok cobbly loam, 15 to 40 percent slopes, on both alluvial fans and hillsides. Rocks crop out on slopes of 10 to 30 percent. The percentage of these inclusions varies from one area to another.

The Sumine soil is moderately deep and well drained. It formed in alluvium and colluvium derived dominantly from igneous rocks. Typically, the surface layer is dark grayish brown very cobbly loam and very cobbly clay loam about 5 inches thick. The subsoil is brown and yellowish brown very cobbly clay loam and very gravelly clay loam about 21 inches thick. Igneous bedrock is at a depth of 26 inches. The depth to bedrock ranges from 20 to 40 inches.

Permeability of the Sumine soil is moderate. Available water capacity is about 2 to 3 inches. Water supplying capacity is 4 to 6 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

The Reywat soil is shallow and well drained. It formed in residuum derived dominantly from igneous rocks. Typically, the surface layer is brown very stony loam about 5 inches thick. The upper 4 inches of the subsoil is brown cobbly clay loam. The lower 8 inches is light yellowish brown very cobbly clay loam. Bedrock is at a depth of 17 inches. The depth to bedrock ranges from 10 to 20 inches.

Permeability of the Reywat soil is moderately slow. Available water capacity is about 1.5 to 2.5 inches. Water supplying capacity is 3 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Sumine soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, muttongrass, needleandthread, and antelope bitterbrush. The normal expected yield of total air-dried herbage is about 975 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Sumine soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This Sumine soil is poorly suited to range seeding. The main limitations of the soil are the content of rock fragments and slope.

The potential plant community on the Reywat soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, Indian ricegrass, and Sandberg bluegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation on this Reywat soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This Reywat soil is poorly suited to range seeding. The main limitation is the depth of the soil to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope and depth of the soil to rock.

This map unit is in capability unit VIIs-U3, nonirrigated. The Sumine soil is in Upland Stony Loam range site, and the Reywat soil is in Upland Shallow Loam range site.

TaA—Taylorsville silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on lake terraces. It formed in lake sediment derived dominantly from limestone, sandstone, and quartzite. Slopes are medium and convex or concave. Elevation is 4,700 to 5,200 feet. The average annual precipitation is about 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 7 inches thick. Below this to a depth of 60 inches or more is mainly pale brown silty clay loam.

Included in this unit are about 5 percent Hupp gravelly loam, 4 to 8 percent slopes, on alluvial fans; 5 percent Hillfield silt loam, 2 to 5 percent slopes, on lake terraces; and 5 percent Parleys loam, 0 to 2 percent slopes, on both lake terraces and alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Taylorsville soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 11 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used for nonirrigated winter wheat.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential and the slow permeability of the soil.

This map unit is in capability unit IIIe-U.

TaB—Taylorsville silt loam, 2 to 4 percent slopes. This very deep, well drained soil is on lake terraces. It formed in lake sediment derived dominantly from limestone, sandstone, and quartzite. Slopes are medium in length and are convex or concave. Elevation is 4,700 to 5,200 feet. The average annual precipitation is about 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 7 inches thick. Below this to a depth of 60 inches or more is mainly pale brown silty clay loam.

Included in this unit are 5 percent Hupp gravelly loam, 4 to 8 percent slopes, on alluvial fans; 5 percent Hillfield silt loam, 2 to 5 percent slopes, on lake terraces; and about 5 percent Parleys loam, 2 to 4 percent slopes, on both lake terraces and alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Taylorsville soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 11 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used for nonirrigated winter wheat.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential and the slow permeability of the soil.

This map unit is in capability unit IIIe-U, nonirrigated.

TaC—Taylorsville silt loam, 4 to 8 percent slopes. This very deep, well drained soil is on lake terraces. It formed in lake sediment derived dominantly from limestone, sandstone, and quartzite. Slopes are medium in length and are convex or concave. Elevation is 4,700 to 5,200 feet. The average annual precipitation is about 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 7 inches thick. Below this to a depth of 60 inches or more is mainly pale brown silty clay loam.

Included in this unit are 5 percent Hupp gravelly loam, 4 to 8 percent slopes, on alluvial fans; 5 percent Hillfield silt loam, 2 to 5 percent slopes, on lake terraces; and about 5 percent Parleys loam, 4 to 8 percent slopes, on both alluvial fans and lake terraces. The percentage of included soils varies from one area to another.

Permeability of this Taylorsville soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 11 to 12 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used for nonirrigated winter wheat.

If nonirrigated small grains are grown on this unit, a one-year fallow rotation is most suitable. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential and slow permeability.

This map unit is in capability unit IIIe-U, nonirrigated.

TbB—Thiokol silt loam, dry, 0 to 2 percent slopes. This very deep, well drained soil is on lake terraces. The soil formed in lake sediment derived dominantly from sedimentary and igneous rocks. Slopes are long and are concave or convex. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,100 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is light brownish gray silt loam about 10 inches thick. The subsoil is light gray silt loam about 13 inches thick. The substratum is light brownish gray silty clay loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Genola silt loam, 1 to 2 percent slopes, and 5 percent Linoyer very fine sandy loam, 1 to 2 percent slopes, on alluvial fans. Woodrow silt loam, 1 to 2 percent slopes, on lake plains, also makes up 5 percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Thiokol soil is moderate. Available water capacity is about 10 to 11 inches. Water supplying capacity is 6.5 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, barley, and wheat.

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, needleandthread, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as the result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations of the soil are shrink-swell potential and the high hazards of water erosion and soil blowing. The hazard of erosion is increased if the soil is left exposed during site development. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

TcC—Thiokol-Linoyer complex, 0 to 5 percent slopes. This map unit is on lake terraces and alluvial

fans. Slopes are medium in length and are convex or concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,100 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 55 percent Thiokol silt loam, dry, 0 to 2 percent slopes, and 35 percent Linoyer very fine sandy loam, 2 to 5 percent slopes. The Thiokol soil is in depressional areas, and the Linoyer soil is on low ridges. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Genola silt loam, 1 to 2 percent slopes, on alluvial fans, and 5 percent Woodrow silt loam, 1 to 2 percent slopes, on alluvial plains. The percentage of these included soils varies from one area to another.

The Thiokol soil is very deep and well drained. It formed in lake sediment derived dominantly from sedimentary and igneous rocks. Typically, the surface layer is light brownish gray silt loam about 10 inches thick. The subsoil is light gray silt loam about 13 inches thick. The substratum is light brownish gray silty clay loam to a depth of 60 inches or more.

Permeability of the Thiokol soil is moderate. Available water capacity is about 10 to 11 inches. Water supplying capacity is 6.5 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Linoyer soil is very deep and well drained. It formed in alluvium and lake sediment derived dominantly from sandstone and limestone. Typically, the surface layer is light brownish gray very fine sandy loam about 7 inches thick. Below this to a depth of 60 inches or more is very pale brown very fine sandy loam and silt loam.

Permeability of the Linoyer soil is moderate. Available water capacity is about 8 to 9 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Thiokol soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, needleandthread, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation on this Thiokol soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This Thiokol soil is well suited to range seeding. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

The potential plant community on the Linoyer soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are needleandthread, Indian ricegrass, Wyoming big sagebrush, winterfat, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Linoyer soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This Linoyer soil is well suited to range seeding. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential on the Thiokol soil and water erosion and soil blowing on both soils.

This map unit is in capability unit VIe-S, nonirrigated. The Thiokol soil is in Semidesert Loam range site, and the Linoyer is in Semidesert Sandy Loam range site.

TdB—Truesdale fine sandy loam, 2 to 4 percent slopes. This moderately deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from sedimentary and igneous rocks. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,000 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown fine sandy loam about 3 inches thick. The upper 14 inches of the subsoil is very pale brown fine sandy loam. The lower 8 inches is moderately saline, very pale brown fine sandy loam about 8 inches thick. A silica cemented hardpan is at a depth of 25 inches (fig. 17). The depth to the hardpan ranges from 20 to 40 inches.

Included in this unit are about 5 percent Medburn fine sandy loam, 2 to 4 percent slopes, and 5 percent Jericho gravelly fine sandy loam, 4 to 15 percent slopes, on alluvial fans, and 10 percent Shabliss very fine sandy loam, 2 to 5 percent slopes, on both alluvial fans and lake terraces. The percentage of these included soils varies from one area to another.

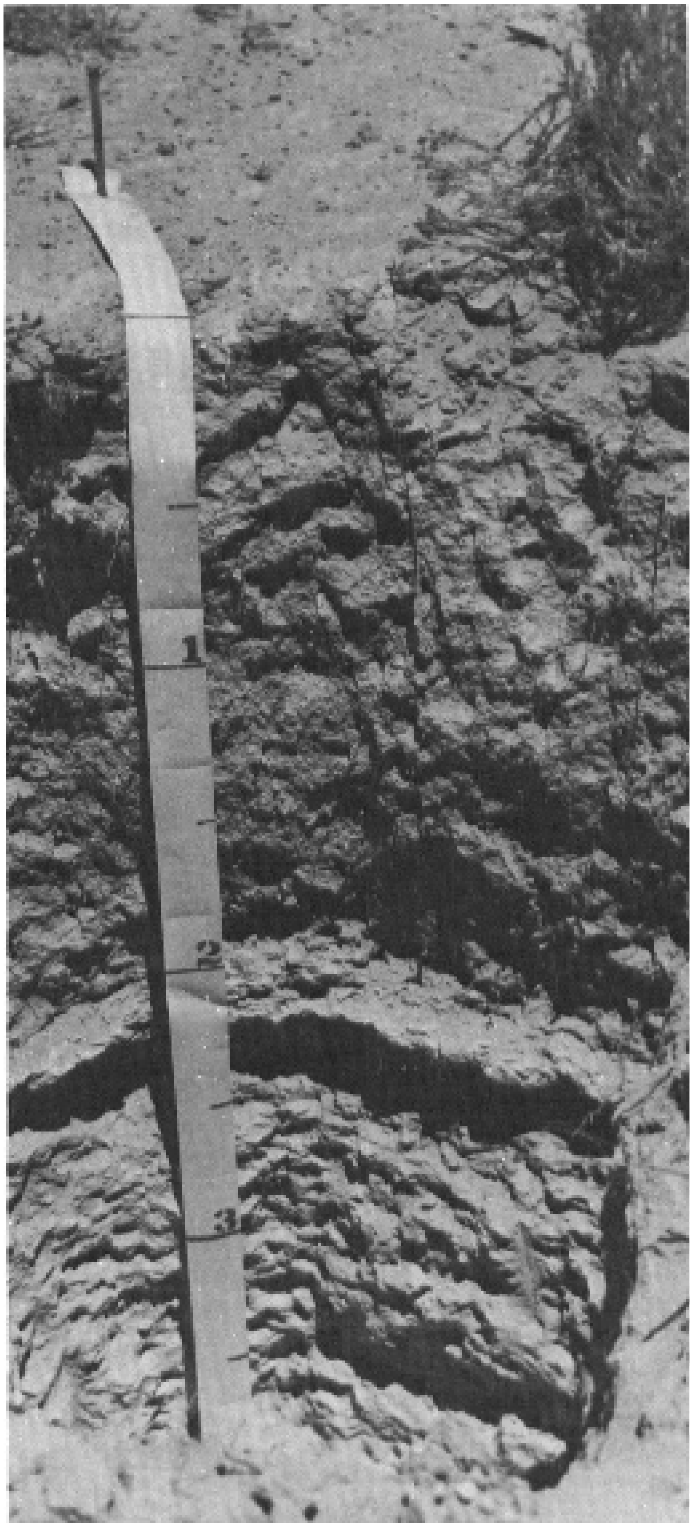


Figure 17.—Profile of Truesdale fine sandy loam, 2 to 4 percent slopes.

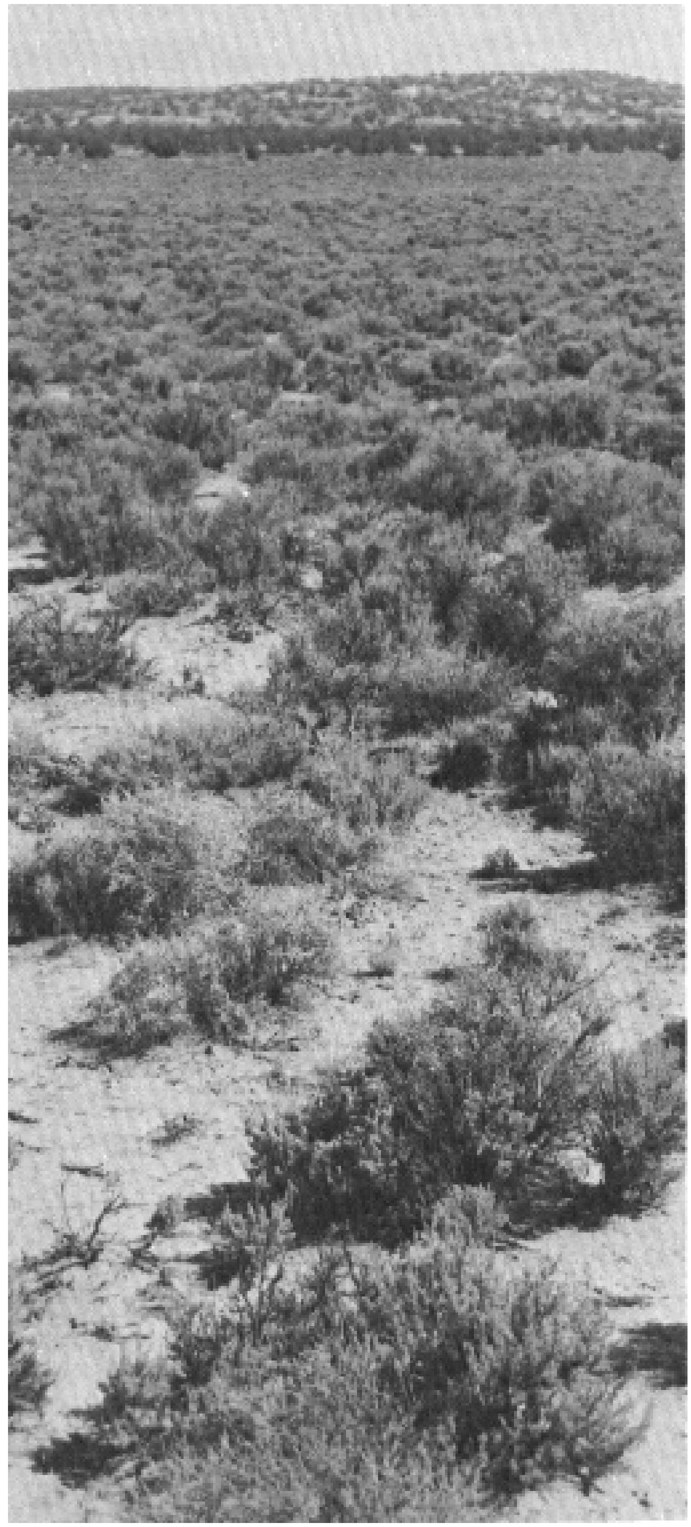


Figure 18.—Landscape of the Truesdale fine sandy loam, 2 to 4 percent slopes.

Permeability of this Truesdale soil is moderate. Available water capacity is about 3 to 6 inches. Water supplying capacity is 5 to 6 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat (fig. 18).

The potential plant community on this soil is about 55 percent perennial grasses, 15 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, needleandthread, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is suited to range seeding. The main limitation is the depth of the soil to the hardpan. Plants suitable for seeding include crested wheatgrass, Siberian wheatgrass, fourwing saltbush, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitation is the moderate depth of the soil to the hardpan. The hardpan is rippable; therefore, it is not a serious limitation for most engineering uses.

This map is in capability unit VIIs-S3, nonirrigated. The range site is Semidesert Loam.

TE—Typic Cryoborolls, moderately sloping. This map unit consists of moderately deep to very deep soils that are high in the mountains on glacial moraines. They formed in glacial moraines derived dominantly from quartzite, limestone, and sandstone. Slopes are 10 to 30 percent and are hummocky to rolling. In most areas the present vegetation is mainly trees. Elevation is 8,000 to 10,000 feet. The average annual precipitation is 20 to 30 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

These soils are variable but commonly the surface layer is dark brown or very dark brown gravelly clay loam to very stony sandy loam about 12 inches thick. The subsoil is brown or dark brown gravelly clay loam to very stony sandy loam about 12 inches thick. The substratum is brown to grayish brown gravelly clay loam to very stony sandy loam to a depth of 30 to 60 inches or more. Bedrock is at a depth of 20 to 40 inches in some pedons.

Included in this unit are about 10 percent Typic Cryaquolls, in depressional areas; 10 percent Lithic Cryoborolls, near ridges; and 10 percent Typic Cryoborolls, steep, 30 to 60 percent slopes. Rock outcrop, on escarpments and ridges, makes up 4 percent of the area. The percentage of these inclusions varies from one area to another.

Permeability of these Typic Cryoborolls is moderately slow to moderately rapid. Available water capacity is about 5 to 10 inches. Water supplying capacity is 10 to 20 inches. Effective rooting depth is 60 inches or more. North-facing slopes have snow cover as much as 10 months of the year.

This unit is used for wildlife habitat.

The potential vegetation on this unit is fir, spruce, and aspen and an understory of grasses and forbs.

The remoteness of most of this unit limits its use. Because of the short growing season, the soil is fragile and not suitable for heavy use.

Not placed into interpretative groups (all in National Forest).

TF—Typic Haploborolls, steep. This map unit consists of shallow to very deep soils on south-facing mountainsides. These soils formed in residuum and colluvium derived dominantly from limestone, sandstone, quartzite, and volcanic rocks. Slopes are 30 to 80 percent and are convex or concave. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,800 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 36 to 45 degrees F, and the average freeze-free season is 30 to 80 days.

These soils are variable but commonly the surface layer is dark brown loam to very gravelly sandy loam about 12 inches thick. The subsoil is brown or reddish brown gravelly loam to very cobbly sandy loam about 12 inches thick. The substratum is light brown or reddish brown very gravelly loam to extremely cobbly sandy loam to a depth of 60 inches or more. The depth to bedrock is less than 20 inches to more than 60 inches.

Included in this unit are about 20 percent Lithic Haploborolls, mainly near ridgetops, and 20 percent Hamtah loam, 30 to 70 percent slopes, on lower lying parts of side slopes and north-facing side slopes. Rock outcrop, on scarps and ridges, makes up 8 percent of the unit. The percentage of these inclusions varies from one area to another.

Permeability of these Typic Haploborolls is moderate or moderately rapid. Available water capacity is about 5 to 10 inches. Water supplying capacity is 9 to 16 inches. Effective rooting depth is 10 inches to 60 inches or more.

This unit is used as rangeland and for wildlife habitat.

In most areas the present vegetation is mainly grasses, sagebrush, chokecherry, and scrubby oak trees. Livestock grazing and recreational uses are limited by

steepness of slope. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

Not placed in interpretive groups.

WaB—Wales loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are short to long and are convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,900 to 6,200 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown loam about 13 inches thick. Below this to a depth of 60 inches or more is brown and pale brown loam and silt loam.

Included in this unit are about 10 percent Juab loam, 2 to 4 percent slopes; 5 percent Birdow loam; and 5 percent Donnardo stony loam, 2 to 8 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of this Wales soil is moderate. Available water capacity is about 9 to 10 inches. Water supplying capacity is 8.5 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and nonirrigated and irrigated crops. The main irrigated crops are alfalfa hay, barley, wheat, and corn used for silage. The main nonirrigated crop is winter wheat.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, basin big sagebrush, lanceleaf yellowbrush, and Nevada bluegrass. The normal expected yield of total air-dried herbage is about 1,475 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope bitterbrush, and species of the potential plant community for which seed or stock is available.

If nonirrigated small grains are grown on this soil, a two-year fallow rotation is most suitable. The soil is well suited to irrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

This unit is well suited to recreation and homesite development.

This map unit is in capability unit IIe-2, irrigated, and IVe-U, nonirrigated. The range site is Upland Loam.

WbB—Wales loam, dry, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. The soil formed in alluvium derived dominantly from sandstone, limestone, and quartzite. Slopes are short to long and are convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,700 to 5,200 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown loam about 13 inches thick. Below this to a depth of 60 inches or more is brown and pale brown loam and silt loam.

Included in this unit are about 6 percent Medburn fine sandy loam, 2 to 4 percent slopes; 5 percent Hiko Peak stony sandy loam, 4 to 8 percent slopes; and 4 percent Genola silt loam, 2 to 5 percent slopes. These included soils are on alluvial fans. The percentage of these soils varies from one area to another.

Permeability of this Wales soil is moderate. Available water capacity is about 9 to 10 inches. Water supplying capacity is 6.5 to 8.5 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0.5 to 1 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and for wildlife habitat, irrigated pasture, and irrigated crops. The main irrigated crops are alfalfa hay, barley, wheat, and corn used for silage.

The potential plant community on this soil is about 75 percent perennial grasses, 10 percent forbs, and 15 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, needleandthread, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include pubescent wheatgrass, Russian wildrye, Siberian wheatgrass, antelope

bitterbrush, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff, reduces soil blowing, and helps maintain soil tilth and organic matter content.

This unit is well suited to recreational uses and homesite development.

This unit is in capability unit IIe-2, irrigated, and VIe-S, nonirrigated. The range site is Semidesert Loam.

WcF—Wallsburg-Rock outcrop complex, 25 to 70 percent slopes. This map unit is on mountainsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 5,800 to 8,000 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the freeze-free season is 70 to 110 days.

This unit is about 65 percent Wallsburg very cobbly loam, 25 to 70 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Agassiz very stony loam, 30 to 70 percent slopes, on mountainsides, and 5 percent Yeates Hollow very stony loam, 25 to 40 percent slopes, on alluvial fans. A Wallsburg very cobbly loam that has slopes of less than 25 percent, on mountainsides, makes up 5 percent of the unit. The percentage of these included soils varies from one area to another.

The Wallsburg soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from quartzite and igneous rocks. Typically, the surface layer is dark grayish brown very cobbly loam about 10 inches thick. The subsoil is pale brown very gravelly clay about 9 inches thick. Bedrock is at a depth of 19 inches. The depth to bedrock ranges from 10 to 20 inches.

Permeability of the Wallsburg soil is moderately slow. Available water capacity is about 0.5 to 2 inches. Water supplying capacity is 4 to 5 inches. Effective rooting depth is 12 to 20 inches. The organic matter content of the surface layer is 1 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Wallsburg soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, basin wildrye, antelope bitterbrush, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This soil is poorly suited to range seeding. The main limitations are slope and depth to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations are shallow depth to bedrock, Rock outcrop, and steepness of slope.

This map unit is in capability subclass VIIs-M3, nonirrigated. The range site is Mountain Shallow Loam.

WdE—Wallsburg-Yeates Hollow complex, 25 to 40 percent slopes. This map unit is on foot slopes and mountainsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 100 days.

This unit is about 40 percent Wallsburg very cobbly loam, 25 to 40 percent slopes, and 40 percent Yeates Hollow very stony loam, 25 to 40 percent slopes. The Wallsburg soil is on mountainsides, and the Yeates Hollow soil is on mountainsides and alluvial fans. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Wallsburg and Yeates Hollow soils that have slopes of 40 to 70 percent, on mountainsides and foot slopes, and 6 percent Broadhead loam, 25 to 70 percent slopes, and 4 percent Manila loam, 8 to 15 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Wallsburg soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from quartzite and igneous rocks. Typically, the surface layer is dark grayish brown very cobbly loam about 10 inches thick. The subsoil is pale brown very gravelly clay about 9 inches thick. Bedrock is at a depth of 19 inches. The depth to the bedrock ranges from 10 to 20 inches.

Permeability of the Wallsburg soil is moderately slow. Available water capacity is about 0.5 to 2 inches. Water supplying capacity is 4 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

The Yeates Hollow soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from conglomerate, quartzite, or sandstone. Typically, the surface layer is very dark grayish brown, dark grayish brown, and brown very stony loam about 17 inches thick. The subsoil is light yellowish brown extremely stony clay and extremely stony clay loam about 28 inches thick. The substratum is yellowish brown extremely stony sandy loam to a depth of 60 inches or more.

Permeability of the Yeates Hollow soil is slow. Available water capacity is about 4.5 to 6 inches. Water supplying capacity is 8.5 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Wallsburg soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, basin wildrye, antelope bitterbrush, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Wallsburg soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can be used to improve deteriorated range if at least 15 percent of the desirable plants still remain.

This Wallsburg soil is poorly suited to range seeding. The main limitations are slope and depth of the soil to rock.

The potential plant community on the Yeates Hollow soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, bearded wheatgrass, mountain brome, Gambel oak, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,900 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Yeates Hollow soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of Gambel oak may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range provided that at least 15 percent of the desirable plants still remain. In areas where brush is managed by these methods, the soil may be subject to a higher hazard of erosion.

This Yeates Hollow soil is poorly suited to range seeding. The main limitations are slope and depth to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness, slope, and shallow depth to bedrock.

This map unit is in capability unit VIIs-M3, nonirrigated. The Wallsburg soil is in Mountain Shallow Loam range site, and the Yeates Hollow soil is in Mountain Gravelly Loam (Oak) range site.

WdF—Wallsburg-Yeates Hollow complex, 40 to 70 percent slopes. This map unit is on foot slopes and mountainsides. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 40 percent Wallsburg very cobbly loam, 40 to 70 percent slopes, and 40 percent Yeates Hollow very stony loam, 40 to 70 percent slopes. The Wallsburg soil is on mountainsides, and the Yeates Hollow soil is on mountainsides and foot slopes. The soils of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Wallsburg and Yeates Hollow soils that have slopes of 25 to 40 percent. These soils are on mountainsides and alluvial fans. Broadhead loam, 25 to 70 percent slopes, on alluvial fans, and Rock outcrop, on ridges and points, each make up 5 percent of the unit. The percentage of these inclusions varies from one area to another.

The Wallsburg soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from quartzite and igneous rocks. Typically, the surface layer is dark grayish brown very cobbly loam about 10 inches thick. The subsoil is pale brown very gravelly clay about 9 inches thick. Bedrock is at a depth of 19 inches. The depth to bedrock ranges from 10 to 20 inches.

Permeability of the Wallsburg soil is moderately slow. Available water capacity is about 0.5 to 2 inches. Water supplying capacity is 4 to 5 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

The Yeates Hollow soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from conglomerate, quartzite, or sandstone. Typically, the surface layer is very dark grayish brown, dark grayish brown, and brown very stony loam about 17 inches thick. The subsoil is light yellowish brown extremely stony clay and extremely stony clay loam about 28 inches thick. The substratum is yellowish brown extremely stony sandy loam to a depth of 60 inches or more.

Permeability of the Yeates Hollow soil is slow. Available water capacity is about 4.5 to 6 inches. Water supplying capacity is 8.5 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content

of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Wallsburg soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, basin wildrye, antelope bitterbrush, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Wallsburg soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain.

This Wallsburg soil is poorly suited to range seeding. The main limitations of this soil for seeding are slope and depth to rock.

The potential plant community on the Yeates Hollow soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, bearded wheatgrass, mountain brome, Gambel oak, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,900 pounds per acre.

Management practices needed to maintain or improve the vegetation on the Yeates Hollow soil include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of oakbrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain. Where brush is managed by these methods, the soil may be subject to a higher hazard of erosion.

This Yeates Hollow soil is poorly suited to range seeding. The main limitations are rock fragments and the content of stones and slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations of the soil are stoniness, slope, and shallow depth to bedrock.

This map unit is in capability unit VIIs-M3, nonirrigated. The Wallsburg soil is in Mountain Shallow Loam range site, and the Yeates Hollow soil is in Mountain Gravelly Loam (Oak) range site.

WeB—Woodrow loamy fine sand, 1 to 2 percent slopes. This very deep, well drained soil is on lake terraces and flood plains. The soil formed in lake sediment and alluvium, which were covered by a cap of windblown sand, derived dominantly from sedimentary rocks. Slopes are 1 to 2 percent, are long, and are convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,550 to 5,500 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown loamy fine sand about 5 inches thick. Below this to a depth of 60 inches or more is pale brown silty clay loam.

Included in this unit are about 5 percent Woodrow silt loam, 1 to 2 percent slopes, and 5 percent Woodrow loamy fine sand, 0 to 1 percent slopes, on lake plains and flood plains. Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes, on lake terraces and alluvial fans, makes up 5 percent of the map unit. The percentage of these included soils varies from one area to another.

Permeability of this Woodrow soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are Indian ricegrass, Wyoming big sagebrush, needleandthread, and bottlebrush squirreltail. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of big sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include Indian ricegrass, crested wheatgrass, and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Sprinkler irrigation is the most suitable method of applying water. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential and slow permeability of the soil. The hazard of erosion is increased if the soil is left exposed during site development. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability unit IIIe-25, irrigated, and VIe-S5, nonirrigated. The range site is Semidesert Sandy Loam.

WfA—Woodrow silt loam, 0 to 1 percent slopes. This very deep, well drained soil is on lake terraces and flood plains. The soil formed in lake sediment and alluvium derived dominantly from sedimentary rocks. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown silt loam about 5 inches thick. Below this to a depth of 60 inches or more is pale brown silty clay loam.

Included in this unit are about 10 percent Woodrow silt loam, 1 to 2 percent slopes, on lake plains and flood plains; 2 percent Mellor silt loam, on flood plains and lake terraces; and 2 percent Duggins loam, 0 to 2 percent slopes, and 5 percent Genola silt loam, 0 to 1 percent slopes, on alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Woodrow soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used as rangeland and for wildlife habitat and irrigated crops. The main irrigated crops are alfalfa hay, wheat, barley, and corn used for silage.

The potential plant community on this unit is about 50 percent perennial grasses, 30 percent forbs, and 20 percent shrubs. Important plant species are bottlebrush squirreltail, winterfat, yellowbrush, and sand dropseed. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of winterfat may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are shrink-swell potential and slow permeability. The hazard of erosion is increased if the soil is left exposed during site development. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This unit is in capability units IIIe-25, irrigated, and VIe-S5, nonirrigated. The range site is Semidesert Silt Loam.

WfB—Woodrow silt loam, 1 to 2 percent slopes. This very deep, well drained soil is on lake terraces and flood plains. The soil formed in lake sediment and alluvium derived dominantly from sedimentary rocks. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,550 to 5,500 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown silt loam about 5 inches thick. Below this to a depth of 60 inches or more is pale brown silty clay loam.

Included in this unit are about 5 percent Woodrow silt loam, 0 to 1 percent slopes, and 5 percent Woodrow silt loam, 2 to 5 percent slopes, on lake plains and flood plains; 2 percent Mellor silt loam, on flood plains and lake terraces; and 5 percent Genola silt loam, 1 to 2 percent slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

Permeability of this Woodrow soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used as rangeland and for wildlife habitat and irrigated crops. The main crops are alfalfa hay, wheat, barley, and corn used for silage.

The potential plant community on this soil is about 50 percent perennial grasses, 30 percent forbs, and 20 percent shrubs. Important plant species are bottlebrush squirreltail, winterfat, yellowbrush, and sand dropseed. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of winterfat may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or

mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water needs to be applied at a rate that insures optimum production without increasing deep percolation, runoff, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations are the shrink-swell potential and slow permeability of the soil. The hazard of erosion is increased if the soil is left exposed during site development. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-25, irrigated, and VIe-S5, nonirrigated. The range site is Semidesert Silt Loam.

WfC—Woodrow silt loam, 2 to 5 percent slopes. This very deep, well drained soil is on lake terraces and flood plains. The soil formed in lake sediment and alluvium derived dominantly from sedimentary rocks. Slopes are long and convex or concave. The native vegetation is mainly grasses and shrubs. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is pale brown silt loam about 5 inches thick. Below this to a depth of 60 inches is pale brown silty clay loam.

Included in this unit are about 8 percent Woodrow silt loam, 1 to 2 percent slopes, and 2 percent Woodrow silt loam, 0 to 1 percent slopes, on lake plains and flood plains; 2 percent Mellor silt loam, on flood plains and alluvial fans; and 5 percent Genola silt loam, 2 to 5 percent slopes, on alluvial fans. The percentage of included soils varies from one area to another.

Permeability of this Woodrow soil is slow. Available water capacity is about 10 to 11 inches. Water supplying capacity is 6 to 9 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used as rangeland and for wildlife habitat and irrigated crops. The main irrigated crops are alfalfa hay, wheat, barley, and corn used for silage.

The potential plant community on this soil is about 50 percent perennial grasses, 30 percent forbs, and 20 percent shrubs. Important plant species are bottlebrush squirreltail, winterfat, yellowbrush, and sand dropseed. The normal expected yield of total air-dried herbage is about 735 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of winterfat may develop as a result of continuous overgrazing. Brush management by prescribed burning and chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland.

This unit is well suited to range seeding. Plants suitable for seeding include crested wheatgrass and species of the potential plant community for which seed or stock is available.

This unit is well suited to irrigated crops. Precipitation in summer is not sufficient for nonirrigated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Irrigation water should be applied at a rate that insures optimum production without increasing runoff, deep percolation, and erosion. Maintaining crop residue on or near the surface reduces runoff and soil blowing and helps maintain soil tilth and organic matter content.

If this unit is used for recreation or homesite development, the main limitations of this soil are moderate shrink-swell potential and slow permeability. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. In summer, irrigation is required for lawns, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability units IIIe-25, irrigated, and VIe-S5, nonirrigated. The range site is Semidesert Silt Loam.

XA—Xerertic Torriorthents, steep. This map unit consists of very deep, well drained soils which are level to very steep and which are on lake terraces. These soils formed in lake sediment derived dominantly from sedimentary and igneous rocks. Slope ranges from 0 to 60 percent. Slopes are short or medium in length and are convex. The native vegetation is mainly a sparse cover of salt-tolerant shrubs and grasses. Elevation is 4,900 to 5,100 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

These soils are variable, but commonly the surface layer is nonsaline to moderately saline, pale brown silt loam to silty clay loam about 8 inches thick. The underlying material is moderately saline to very strongly saline, very pale brown silt loam to clay to a depth of 60

inches or more. These soils are strongly alkaline or very strongly alkaline.

Permeability of these Xerertic Torriorthents is slow or very slow. Available water capacity is about 5 to 6 inches. Water supplying capacity is 5 to 7 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 0 to 2 percent. Runoff is rapid, and the hazard of water erosion is high.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, shadscale, bottlebrush squirreltail, and Indian ricegrass.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of black greasewood may develop as a result of continuous overgrazing.

This unit is poorly suited to range seeding. The main limitation of the soil is the content of salt and alkali.

This unit is poorly suited to irrigated and nonirrigated crops. The main limitations are the content of salt, slow or very slow permeability, and slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slow or very slow permeability, shrink-swell potential, and slope.

This map unit is in capability unit VIIs-S58, nonirrigated.

XB—Xeric Torriorthents-Rock outcrop complex, steep. This map unit is on hillsides. Slopes are 30 to 70 percent and are medium in length and convex. In most areas the present vegetation is mainly a sparse cover of shrubs (fig. 19). Elevation is 5,600 to 7,600 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 60 percent Xeric Torriorthents, 30 to 70 percent slopes, and 20 percent Rock outcrop. The Xeric Torriorthents is on side slopes, and the Rock outcrop is on ridges and escarpments. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Rofiss gravelly clay loam, 4 to 15 percent slopes, and 5 percent Manila loam, 8 to 15 percent slopes, on alluvial fans, and 5 percent Lizzant very cobbly loam, dry, 30 to 60 percent slopes, on hillsides. The percentage of these included soils varies from one area to another.

The Xeric Torriorthents are shallow to moderately deep and well drained. They formed in residuum and colluvium derived dominantly from shale. These soils are variable but commonly the surface layer is shaly and very shaly loam to clay loam about 3 inches thick. The underlying material is shaly and very shaly clay loam to silty clay about 4 to 37 inches thick. Bedrock is at a depth of 7 to 40 inches. Depth to bedrock ranges from 10 to 40 inches.

Permeability of the Xeric Torriorthents is slow or very slow. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 2 to 5 inches. Effective rooting depth is 10 to 40 inches. The organic matter content of the surface layer is 0 to 2 percent. Runoff is rapid, and the hazard of water erosion is high.

Rock outcrop consists of exposures of barren shale, mainly on escarpments and ridges.

This unit is used for wildlife habitat.

The potential plant community on this soil is about 20 percent perennial grasses, 10 percent forbs, and 70 percent shrubs. Important plant species are birchleaf mountainmahogany, bluebunch wheatgrass, and Sandberg bluegrass. Because the soil is steep and shallow, grazing management practices are poorly suited to this unit.

This unit is poorly suited to recreation and homesite development. The main limitations are the steepness of slope and the shallow depth of the soil to bedrock.

This map unit is in capability unit VIIs-U3, nonirrigated.

YaC—Yeates Hollow very stony loam, 6 to 10 percent slopes. This very deep, well drained soil is on alluvial fans and mountainsides. The soil formed in alluvium and colluvium derived dominantly from conglomerate, quartzite, and sandstone. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is very dark grayish brown, dark grayish brown, and brown very stony loam about 17 inches thick. The subsoil is light yellowish brown extremely stony clay and extremely stony clay loam about 28 inches thick. The substratum is yellowish brown extremely stony sandy loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Yeates Hollow very stony loam, 10 to 25 percent slopes; 5 percent Manila loam, 4 to 8 percent slopes; and 2 percent Broadhead soils, on alluvial fans. One percent of this unit is a soil that is shallow to a carbonate cemented hardpan. Wallsburg very cobbly loam, 25 to 70 percent slopes, makes up 3 percent of the unit. Both of these soils are on mountainsides. The percentage of these included soils varies from one area to another.

Permeability of this Yeates Hollow soil is slow. Available water capacity is about 4.5 to 6 inches. Water supplying capacity is 8.5 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, mountain big sagebrush, and Kentucky bluegrass. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of oakbrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is poorly suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, bitterbrush, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

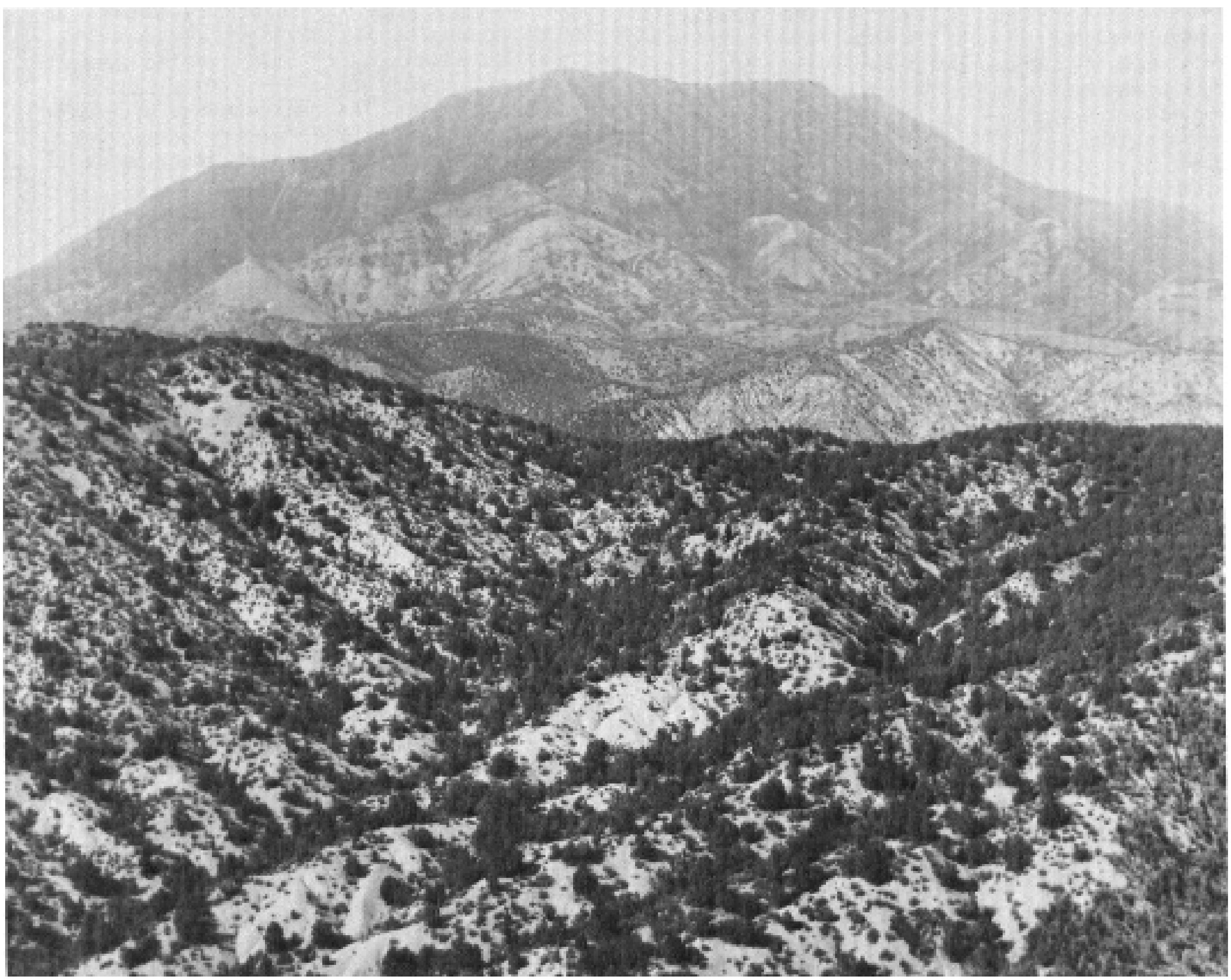


Figure 19.—Juniper trees grow on the Xeric Torriorthents-Rock outcrop complex, steep, in foreground. Lundy-Rock outcrop complex, 30 to 70 percent slopes, on Mount Nebo in the background.

If this unit is used for recreation or homesite development, the main limitations are stoniness and slow permeability.

This map unit is in capability subclass VIs-MX, nonirrigated. The range site is Mountain Stony Loam.

YaD—Yeates Hollow very stony loam, 10 to 25 percent slopes. This very deep, well drained soil is on alluvial fans and mountainsides. The soil formed in alluvium and colluvium derived dominantly from conglomerate, quartzite, and sandstone. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is very dark grayish brown, dark grayish brown, and brown very stony loam about 17 inches thick. The subsoil is light yellowish brown extremely stony clay and extremely stony clay loam about 28 inches thick. The substratum is yellowish brown extremely stony sandy loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Yeates Hollow very stony loam, 6 to 10 percent slopes; 5 percent Yeates Hollow very stony loam, 25 to 40 percent slopes; 5 percent Manila loam, 8 to 15 percent slopes; and 2 percent Broadhead soils, on alluvial fans. Wallsburg very cobbly loam, 25 to 70 percent slopes, on mountainsides, makes up 3 percent of the unit. The percentage of these included soils varies from one area to another.

Permeability of this Yeates Hollow soil is slow. Available water capacity is about 4.5 to 6 inches. Water supplying capacity is 8.5 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, mountain big sagebrush, and Kentucky bluegrass. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of oakbrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical or mechanical treatment and proper grazing use can improve deteriorated rangeland. Where brush is managed by these methods, however, the soil may be subject to a higher hazard of erosion.

This unit is poorly suited to range seeding. The main limitations are the content of rock fragments and slope. Plants suitable for seeding include Whitmar wheatgrass, bitterbrush, slender wheatgrass, and species of the potential plant community for which seed or stock is available.

If this unit is used for recreation or homesite development, the main limitations are large stones, slow permeability, and slope.

This map unit is in capability unit VIs-MX, nonirrigated. The range site is Mountain Stony Loam.

YaE—Yeates Hollow very stony loam, 25 to 40 percent slopes. This very deep, well drained soil is on foot slopes and mountainsides. The soil formed in alluvium and colluvium derived dominantly from conglomerate, quartzite, and sandstone. Slopes are medium and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is very dark grayish brown, dark grayish brown, and brown very stony loam about 17 inches thick. The subsoil is light yellowish brown extremely stony clay and extremely stony clay loam about 28 inches thick. The substratum is yellowish brown extremely stony sandy loam to a depth of 60 inches or more.

Included in this unit are about 5 percent Yeates Hollow very stony loam, 10 to 25 percent slopes, and 2 percent Broadhead soils, on alluvial fans, and 5 percent Yeates Hollow very stony loam, 40 to 70 percent north-facing slopes, and 5 percent Wallsburg very cobbly loam, 25 to 70 percent slopes, on mountainsides. The percentage of these included soils varies from one area to another.

Permeability of this Yeates Hollow soil is slow. Available water capacity is about 4.5 to 6 inches. Water supplying capacity is 8.5 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is moderate, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, antelope bitterbrush, mountain big sagebrush, and Kentucky bluegrass. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of oakbrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or chemical

treatment and proper grazing use can improve deteriorated range if at least 15 percent of the desirable plants still remain. Where brush is managed by these methods, the soil may be subject to a higher hazard of erosion.

This unit is poorly suited to range seeding. The main limitation is slope.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope and stoniness.

This map unit is in capability unit VIs-MX, nonirrigated. The range site is Mountain Stony Loam.

YbF—Yeates Hollow very stony loam, 40 to 70 percent north slopes. This very deep, well drained soil is on mountainsides and foot slopes. The soil formed in colluvium derived dominantly from conglomerate, quartzite, and sandstone. Slopes are medium in length and are convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is very dark grayish brown, dark grayish brown, and brown very stony loam about 17 inches thick. The subsoil is light yellowish brown extremely stony clay and extremely stony clay loam about 28 inches thick. The substratum is yellowish brown extremely stony sandy loam to a depth of 60 inches or more.

Included in this unit are about 10 percent Yeates Hollow very stony loam, 25 to 40 percent slopes, and 3 percent Broadhead soils, on alluvial fans, and 5 percent Wallsburg very cobbly loam, 25 to 70 percent slopes, on mountainsides. Rock outcrop on escarpments and ridges makes up 2 percent of the unit. The percentage of these inclusions varies from one area to another.

Permeability of this Yeates Hollow soil is slow. Available water capacity is about 4.5 to 6 inches. Water supplying capacity is 8.5 to 11 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bearded wheatgrass, mountain brome, Gambel oak, and mountain big sagebrush. The normal expected yield of total air-dried herbage is about 1,900 pounds per acre. Because the soil is steep and shallow, grazing management practices are poorly suited to this unit.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope and stoniness.

This map unit is in capability unit VIs-MXO, nonirrigated. The range site is Mountain Gravelly Loam (Oak).

prime farmland

Prime farmland, as defined by the United States Department of Agriculture, is the land that is best suited to produce food, feed, forage, fiber, and oilseed crops. It must either be used to produce food or fiber or be available for these uses. It has the soil quality, length of growing season, and moisture supply needed to economically produce a sustained high yield of crops when it is managed properly. Prime farmland produces the higher yields with minimal energy and economic resources, and farming it results in the least disturbance to the environment.

Land designated as prime farmland consists of those soils that are best suited to continuous crop production. General definitions of prime farmland are based on national guidelines that have been established. Briefly these are as follows: (1) The soils have an adequate moisture supply. (2) The soils at a depth of 20 inches have a mean summer temperature above 59 degrees F. (3) The soils have a pH level of between 4.5 and 8.4 above a depth of 40 inches, and the exchangeable sodium percentage is less than 15. (4) The soil has no water table that prevents the production of food, feed, fiber, and forage crops. (5) The soils can be managed so that the conductivity of the saturation extract above a depth of 20 inches is less than 4 millimhos. (6) The soils are not flooded frequently; less than once in two years. (7) There is a minimal erosion danger. The product of the K (erodibility) factor times the percent slope is 2 or less. (8) The soils have a permeability rate of at least 0.06 inch per hour in the upper 20 inches. (9) Less than 10 percent of the surface layer consists of rock fragments coarser than 3 inches.

About 155,500 acres, or about 18 percent, of the Juab County part of the survey area would meet the requirements for prime farmland if an adequate and dependable supply of irrigation water were available. About 103,850 acres, or about 22 percent, of the Utah County part of the survey area would also meet the requirements. The actual acreage irrigated, however, is not known. In the Juab County part an estimated 11,000 acres are irrigated, and approximately 19,000 acres in the Utah County part.

These lands could add between 10 and 20 percent of prime farmland production to the respective counties. The major irrigated areas are near the towns of Nephi, Levan, Mills, and Genola and in Goshen Valley. The major crops grown are wheat, corn used for silage, barley, and alfalfa hay.

The map units in the Fairfield-Nephi Area that would meet the requirements for prime farmland, if irrigated,

are listed below. This list does not constitute a recommendation for a particular land use.

AhA	Ashdown loam, 0 to 2 percent slopes
AhB	Ashdown loam, 2 to 4 percent slopes
AkA	Ashdown loam, moist, 0 to 2 percent slopes
AkB	Ashdown loam, moist, 2 to 4 percent slopes
Bf	Birdow loam
CaB	Calita loam, 2 to 4 percent slopes
CaC	Calita loam, 4 to 8 percent slopes
Ce	Cheebe fine sandy loam
DaC	Dagor loam, 2 to 8 percent slopes
DfB	Doyce loam, 2 to 4 percent slopes
DgC	Doyce silt loam, loamy substratum, 2 to 4 percent slopes
FgB	Freedom silt loam, 0 to 2 percent slopes
FgC	Freedom silt loam, 2 to 5 percent slopes
GaBP	Genola fine sandy loam, hummocky, 1 to 2 percent slopes
GbA	Genola silt loam, 0 to 1 percent slopes
GbB	Genola silt loam, 1 to 2 percent slopes
GbC	Genola silt loam, 2 to 5 percent slopes
GcA	Genola silt loam, moist, 0 to 1 percent slopes
GcB	Genola silt loam, moist, 1 to 2 percent slopes
GcC	Genola silt loam, moist, 2 to 5 percent slopes
JbA	Juab loam, 0 to 2 percent slopes
JbB	Juab loam, 2 to 4 percent slopes
JbC	Juab loam, 4 to 8 percent slopes
JcB	Juab loam, gravelly substratum, 2 to 4 percent slopes
JcC	Juab loam, gravelly substratum, 4 to 8 percent slopes
JdC	Juab complex, 4 to 8 percent slopes
KaB	Keigley silt loam, dry, 0 to 2 percent slopes
Kb	Kirkham silt loam
LaA	Linoyer very fine sandy loam, 0 to 1 percent slopes
LaB	Linoyer very fine sandy loam, 1 to 2 percent slopes
LaC	Linoyer very fine sandy loam, 2 to 5 percent slopes
MfA	Medburn fine sandy loam, 0 to 2 percent slopes
MfB	Medburn fine sandy loam, 2 to 4 percent slopes
Mm	Moroni silty clay loam
MuB	Musinia silt loam, 0 to 2 percent slopes
MuC	Musinia silt loam, 2 to 5 percent slopes
MvB	Musinia silty clay loam, moist, 0 to 2 percent slopes
MvC	Musinia silty clay loam, moist, 2 to 5 percent slopes
PfA	Parleys loam, 0 to 2 percent slopes
PfB	Parleys loam, 2 to 4 percent slopes
PfC	Parleys loam, 4 to 8 percent slopes
TaA	Taylorsville silt loam, 0 to 2 percent slopes
TaB	Taylorsville silt loam, 2 to 4 percent slopes
TcC	Thiokol-Linoyer complex, 0 to 5 percent slopes
WaB	Wales loam, 2 to 4 percent slopes
WbB	Wales loam, dry, 2 to 4 percent slopes
WfA	Woodrow silt loam, 0 to 1 percent slopes
WfB	Woodrow silt loam, 1 to 2 percent slopes
WfC	Woodrow silt loam, 2 to 5 percent slopes

Additional soils within the survey area are important to farming in the state of Utah when they are irrigated, but do not meet the requirements for prime farmland.

Lands important to the state meet the following criteria: (1) The soils have an adequate moisture supply to permit economic crop production in 5 out of 10 years. (2) At a depth of 20 inches the soils have a mean summer temperature above 59 degrees F. (3) The soils have a pH level of between 4.5 and 8.6 above a depth of 20 inches, and exchangeable sodium percentage is less than 15. (4) No high water table prevents the production of food, feed, fiber, and forage crops. (5) All soils can be managed so that the conductivity of the saturation extract in the upper 20 inches is less than 4 millimhos. (6) The soils are not flooded frequently; less than once in 2 years. (7) Erodibility equals the product of K (erodibility factor) times a percent slope of 5 or less. About 15,600 acres, or about 4 percent, of the survey area within Juab and Utah Counties meets these criteria.

The map units in the Fairfield-Nephi Soil Survey Area that meet the requirements for important farmlands in the state are listed below. This list does not constitute a recommendation for a particular land use.

Bb	Benjamin silty clay loam
Bc	Benjamin silty clay loam, moderately saline-alkali
Bm	Bramwell silt loam
CaD	Calita loam, 8 to 15 percent slopes
Cf	Cheebe silty clay loam
FaB	Firmage gravelly loam, dry, 2 to 4 percent slopes
HbA	Hansel silt loam, 0 to 2 percent slopes
LaD2	Linoyer very fine sandy loam, 5 to 10 percent slopes, eroded

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

In this section, the system of land capability classification used by the Soil Conservation Service is explained, and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the

way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6.

The acreage of soils in each capability class and subclass is shown in table 7. The capability classification of each map unit is given in the section "Detailed soil map units."

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding a number, letter, or letter and number to the subclass symbol, for example, IIe-26 or III-25 for irrigated soils and VIs-UX or VIIs-M4 for nonirrigated soils.

In Utah, an alpha-numeric system is used to suggest the chief kinds of limitations of the soils in the capability unit. The number 2 in the first position means the capability unit has 100 to 140 freeze-free days on irrigated soil. The letters S, U, M, and H in the first position are for nonirrigated capability units that have a range of average annual precipitation. The letter S (Semidesert range site) means 8 to 12 inches of precipitation, U (Upland range site) means 12 to 16 inches, M (Mountain range site) means 16 to 22 inches, and H (High Mountain range site) means 22 to 35 inches. Additional numbers or letters used in the second position are used to show limitations as follows: 2 means water overflows or surface drainage is inadequate, 3 means an inhibiting layer, 4 means a low water holding capacity (gravelly or cobbly soils), 5 means slow permeability, 6 means low water capacity (sandy soils), 7 means high salinity, 8 means high saline-alkaline soils, X means coarse fragments on the surface, 0 means cold temperature, J means the vegetation is juniper, A means the vegetation is aspen, and Q means the vegetation is oakbrush.

rangeland

Range is an important resource in the survey area. Approximately 1,184,872 acres, or 88 percent of the survey area, is used as range. Perennial grasses, shrubs, and forbs are the dominant vegetation, but some areas support a cover of aspen, maple, oak, and coniferous trees.

Range is used primarily for grazing by cattle and sheep in spring, summer, and fall. Some of the warmer areas are used as winter range for sheep, but most of the sheep graze during the winter in the deserts of western Utah and eastern Nevada. Water is generally adequate and is supplied by streams and springs and seeps.

The native vegetation in many parts of the survey area has been greatly depleted by continued, excessive

grazing. Much of the acreage that was once open grassland is now covered by annuals and shrubs. Productivity of the range can be increased by using such management practices as planned grazing systems, brush management, fencing, water development, and reseeding, where it is feasible. The practices used or recommended for use should be coordinated with the soils, range sites, and specific type of operation.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was established during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. The normal expected yield of total herbage is stated in the map unit description.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community in a given use.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, reduction of undesirable brush species, conservation of water, and control of water erosion and soil blowing. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

climatic regimes and their effect on range

Plants growing on the range in different parts of the survey area are affected by differences in the kind of soil and by differences in climate. Five distinct climatic regimes are recognized in the survey area. These regimes are determined on the basis of differences in the amount of moisture received and on differences in the average annual temperature and the length of the growing season.

The five climatic regimes are the Semidesert, Upland, Mountain, High Mountain, and Wet and Semiwet.

SEMIDESERT CLIMATIC REGIME.—The average annual precipitation ranges from 8 to 12 inches and occurs mainly in the winter. The precipitation in summer contributes little to the growth of plants. The freeze-free period is 100 to 140 days. The mean annual temperature is about 45 to 52 degrees F. Elevations range from about 4,500 to 5,800 feet.

UPLAND CLIMATIC REGIME.—The average annual precipitation ranges from 12 to 16 inches and occurs mostly as snow in the winter. Precipitation in summer contributes little to the growth of plants. The freeze-free season is 70 to 140 days. The mean annual temperature is 41 to 52 degrees F. Elevations range from about 4,500 to 8,100 feet.

MOUNTAIN CLIMATIC REGIME.—The average annual precipitation ranges from 16 to 22 inches and occurs mostly as snow in winter. Precipitation in summer contributes little to the growth of plants. Mountain range sites are on all exposures and slopes. The freeze-free season is about 70 to 110 days. The mean annual air temperature is 36 to 45 degrees F. Elevations range from about 6,000 to 10,500 feet.

HIGH MOUNTAIN CLIMATIC REGIME.—The average annual precipitation ranges from 22 to 35 inches and occurs mostly as snow in winter. High mountain sites are on all exposures and slopes. The freeze-free season is about 30 to 80 days. The mean annual temperature is 36 to 45 degrees F. Elevations range from 7,000 to 11,650 feet.

WET AND SEMIWET CLIMATIC REGIME.—In this climatic regime the soils are wet because they receive run-on water or have a high water table. In these areas the climate is characterized by cold, snowy winters and warm, dry summers. The average annual precipitation ranges from 8 to 16 inches. Most of the water available to plants is run-on from adjacent irrigated land or is from the water table. The freeze-free season is about 100 to 140 days. The mean annual temperature is about 45 to 52 degrees F. Elevations range from 4,485 to 5,200 feet.

recreation

The survey area is very popular for hunting deer and elk. Popular game birds found in this survey area are pheasant, grouse, mourning dove, and waterfowl.

Utah Lake, Sevier Bridge Reservoir, and Mona Reservoir provide boating, water skiing, fishing, and swimming for residents and tourists.

The canyons and mountains in the survey area are popular for camping, hiking, picnicking, horseback riding, sightseeing, and snowmobiling.

The Little Sahara Recreation area is popular for camping and picnicking and for the use of dirt bikes and dune buggies.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, the ability of soil to support vegetation, access to water, potential water impoundment sites, and either access to public sewerlines or the capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey. Especially helpful are interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets given in table 10.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or a hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, and bicycling should require little or no cutting and filling. The best soils for paths and trails are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They have moderate slopes and few or no stones or boulders on the surface.

wildlife habitat

Most soils in the survey area support vegetation that is used by wildlife to some extent. Most species of wildlife are not confined to areas of a particular soil or group of soils. The presence of wildlife in a given area is dependent upon the availability of food, water, and cover, and their relationship to each other. The suitability of the soil for providing these elements and how the soil is used determine the relative abundance of wildlife species in the area.

The mountainous lands of the survey area provide summer habitat for mule deer and elk. Other important species include coyote, blue grouse, snowshoe hare, and occasional black bear. The uplands provide winter habitat for the above mentioned species and also sage grouse, badger, bobcat, and ground squirrel. Saline wetlands and adjacent areas provide habitat for some small carnivores including red fox, skunk, and weasel; small mammals, such as ground squirrel and cottontail; and such terrestrial and aquatic birds as hawks, owls, pheasants, songbirds, and ducks.

Semidesert areas provide habitat for several unique species including chuckar partridges, rattlesnakes, scorpions, and kangaroo rats.

Natural streams and lakes in the survey area provide fishing and recreation for local residents and tourists. Some streams and lakes provide fishing year around. Important fish species are rainbow trout, bass, and catfish. Small reservoirs and privately owned ponds in the area also support limited fisheries. Natural streams provide habitat for beaver, muskrat, and mink.

The endangered peregrine falcon and bald eagle are known to be within the survey area. These species are migrants. The eagle is more prevalent during winter months; the falcon is present during the summer. There are no known threatened or endangered fish species in the area.

Wildlife as they relate to the vegetation of the Fairfield-Nephi Soil Survey Area are discussed in more detail in the "General soil map units" section of this report.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are goldenrod, beggarweed, wheatgrass, and Indian ricegrass.

Coniferous plants furnish browse, seeds, and cones. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are mountainmahogany, bitterbrush, snowberry, and big sagebrush.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are wild millet, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include pheasant, meadowlark, field sparrow, mourning dove, and cottontail.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include ruffed grouse, woodpeckers, squirrels, gray fox, deer, and elk.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, shore birds, muskrat, mink, and beaver.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include deer, sage grouse, meadowlark, and lark bunting.

engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a

flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

sanitary facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic

layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

construction materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts,

are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, and terraces and diversions.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering index properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and

organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion and the amount of soil lost. Soils are grouped according to the following distinctions:

1. Sands, coarse sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Sandy loams, coarse sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible. Crops can easily be grown.

7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can easily be grown.

8. Stony or gravelly soils and other soils not subject to wind erosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter of the plow layer is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

soil and water features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Cemented pans are cemented or indurated subsurface layers within a depth of 5 feet. Such pans cause difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continously indurated or more than 18

inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Not shown in the table is subsidence caused by an imposed surface load or by the withdrawal of ground water throughout an extensive area as a result of lowering the water table.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

physical and chemical analyses of selected soils

The results of physical analysis of several typical pedons in the survey area are given in table 17 and the results of chemical analysis in table 18. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil series and their morphology." Soil samples were analyzed by the Soil Conservation Service at the Riverside Soils Laboratory that was at Riverside, California, and at the Nation Soils Laboratory at Lincoln, Nebraska.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an oven-dry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (*4*).

Coarse materials—(2-75 mm fraction) weight estimates of the percentages of all materials less than 75 mm (3B1).
Coarse materials—(2-250 mm fraction) volume estimate of the percentage of all material greater than 2 mm (3B2).
Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1).
Water-retention difference—at 15 bars for less than 2 mm material.
Organic carbon—dichromate, ferric sulfate titration (6A1a).
Cation-exchange capacity—ammonium acetate, pH 7.0 (5A1b).
Reaction (pH)—1:1 water dilution (8C1a).
Reaction (pH)—saturated paste (8C1b).
Carbonate as calcium carbonate—manometric (6E1b).
Electrical conductivity—saturation extract (8A1a).

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*5*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 19, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquents (*Hapl*, meaning minimal horizonation, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, mesic Typic Haplaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*3*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*5*). Unless otherwise stated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Agassiz series

The Agassiz series consists of shallow, somewhat excessively drained, moderately permeable soils on mountainsides. These soils formed in residuum and colluvium derived dominantly from limestone. Slope is 30 to 70 percent. Elevation is 6,000 to 8,500 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Lithic Haploxerolls.

Typical pedon of Agassiz very stony loam, 30 to 70 percent slopes, about 9 miles north of Cedar Fort, about 2,400 feet west and 500 feet north of the southeast corner of sec. 11, T. 5 S., R. 3 W.

A11—0 to 4 inches; brown (10YR 4/3) very stony loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; few fine and medium pores; 25 percent of the surface covered by stones and flagstones; neutral (pH 6.8); clear smooth boundary.

A12—4 to 9 inches; brown (10YR 4/2) very stony loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; few fine and medium pores; 40 percent stone and flagstones and 20 percent gravel; neutral (pH 6.8); clear smooth boundary.

A13—9 to 14 inches; brown (10YR 4/3) very stony loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, friable, sticky and slightly plastic; few fine and very fine roots; few fine and medium pores; 50 percent stones and flagstones and 20 percent gravel; neutral (pH 6.8); clear smooth boundary.

C—14 to 19 inches; yellowish brown (10YR 5/4) extremely stony loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; 80 percent stones; neutral (pH 7.2); abrupt irregular boundary.

R—19 inches; fractured limestone.

The mollic epipedon is 10 to 19 inches thick. Carbonates are at a depth of 7 to 20 inches. The control section is 50 to 80 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

The A1 horizon has texture of very stony loam, very cobbly loam, or very gravelly loam. It has a clay content of 18 to 27 percent. It is 35 to 60 percent rock fragments. Reaction is neutral to moderately alkaline.

The C horizon has texture of extremely stony loam, very stony loam, very cobbly loam, or very gravelly loam. It has a clay content of 18 to 27 percent. It is 35 to 80 percent rock fragments. Reaction is neutral to moderately alkaline.

Amtoft series

The Amtoft series consists of shallow, somewhat excessively drained, moderately rapidly permeable soils on hillsides and ridges. These soils formed in residuum and colluvium derived from sandstone, limestone, and conglomerate. Slope is 8 to 70 percent. Elevation is 4,900 to 6,200 feet. Average annual precipitation is 8 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Lithic Xerollic Calciorthids.

Typical pedon of an Amtoft stony loam in an area of Amtoft, moist-Rock outcrop complex, 8 to 30 percent slopes, about 10 miles west of Nephi, about 500 feet west of the southeast corner of sec. 3, T. 13 S., R. 2 W.

A11—0 to 3 inches; pale brown (10YR 6/3) stony loam, brown (10YR 4/3) moist; moderate very fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; 5 percent of surface covered by stones; 15 percent gravel and 5 percent cobbles in matrix; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

A12—3 to 5 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine roots; 20 percent gravel; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

C1ca—5 to 14 inches; light gray (10YR 7/2) very cobbly loam, pale brown (10YR 6/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; 20 percent gravel and 20 percent cobbles; very strongly calcareous, carbonates in pendants and as coatings on rock fragments; strongly alkaline (pH 8.8); clear smooth boundary.

C2ca—14 to 19 inches; light gray (10YR 7/2) very gravelly fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; 25 percent gravel and 15 percent cobbles; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); abrupt wavy boundary.

R—19 inches; limestone.

The solum is 4 to 6 inches thick. The control section is 40 to 60 percent rock fragments. Limestone is at a depth of 10 to 20 inches.

The A1 horizon has a clay content of 18 to 27 percent. It is 15 to 30 percent rock fragments. The calcium carbonate equivalent is 20 to 75 percent.

The Cca horizon has a clay content of 18 to 27 percent. It is 40 to 60 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 40 to 80 percent.

Ant Flat series

The Ant Flat series consists of very deep, well drained, slowly permeable soils on alluvial fans. These soils formed in alluvium derived from sandstone, limestone, and shale. Slope is 8 to 15 percent. Elevation is 5,500 to 7,500 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are fine, montmorillonitic, frigid Calcic Argixerolls.

Typical pedon of Ant Flat loam, 8 to 15 percent slopes, about 9 miles south and 2 miles east of Levan, about 300 feet south and 1,400 feet west of the northeast corner of sec. 17, T. 16 S., R. 1 E.

A1—0 to 10 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many medium and very fine roots; many fine pores; neutral (pH 6.8); clear wavy boundary.

B21t—10 to 16 inches; brown (10YR 4/3) clay, very dark brown (10YR 3/2) moist; strong medium subangular blocky structure; extremely hard, firm, very sticky and very plastic; common very fine and many fine roots; many fine pores; neutral (pH 6.8); clear wavy boundary.

B22t—16 to 31 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; strong medium angular blocky structure; extremely hard, very firm, very sticky and very plastic; common very fine roots; neutral (pH 6.8); clear wavy boundary.

B23tca—31 to 36 inches; brown (7.5YR 5/4) clay, dark reddish brown (5YR 3/4) moist; strong medium and coarse prismatic structure; extremely hard, firm, very sticky and very plastic; few very fine roots; slightly calcareous, carbonates disseminated and in soft powder coatings on peds; neutral (pH 7.2); clear wavy boundary.

B3tca—36 to 48 inches; light reddish brown (5YR 6/4) silty clay, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; slightly calcareous, disseminated carbonates; mildly alkaline (pH 7.6); clear wavy boundary.

Cca—48 to 60 inches; pinkish gray (7.5YR 7/2) silty clay, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; very hard, firm, very sticky, very plastic; few very fine roots; strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.8).

The solum is 36 to 48 inches thick. The mollic epipedon is 13 to 16 inches thick. Secondary carbonates are at a depth of 31 to 36 inches. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent.

The B2t horizon has texture of silty clay or clay. The clay content is 40 to 60 percent.

Ashdown series

The Ashdown series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans. These soils formed in alluvium derived from shale, limestone, and conglomerate. Slope is 0 to 4 percent. Elevation is 5,000 to 5,450 feet. Average annual precipitation is 10 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed (calcareous), mesic Xeric Torrifluvents.

Typical pedon of Ashdown loam, moist, 2 to 4 percent slopes, about 5 miles south and 3 miles west of Nephi, about 2,500 feet north and 130 feet west of the southeast corner of sec. 2, T. 14 S., R. 1 W.

Ap—0 to 8 inches; strong brown (7.5YR 5/6) loam, dark reddish brown (5YR 3/4) moist; weak medium subangular blocky structure that parts to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; few very fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C1—8 to 17 inches; yellowish red (5YR 5/6) thinly stratified loam and silt loam; reddish brown (5YR 4/4) moist; weak coarse subangular blocky structure; hard, firm, sticky and plastic; few fine and very fine roots; few fine and medium pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C2—17 to 23 inches; yellowish red (5YR 5/6) loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine roots; common very fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C3—23 to 27 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); abrupt smooth boundary.

C4—27 to 32 inches; strong brown (7.5YR 5/6) silt loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; few very fine and fine pores; slightly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C5—32 to 48 inches; yellowish red (5YR 5/6) silty clay loam, yellowish red (5YR 4/6) moist; weak medium prismatic structure that parts to weak medium subangular blocky; hard, firm, sticky and plastic; few very fine roots; few fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C6—48 to 60 inches; yellowish red (5YR 5/6) light silty clay loam, yellowish red (5YR 4/6) moist; massive; hard, firm, very sticky and plastic; few very fine roots; common very fine and few fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 8 to 11 inches thick. Bedrock is at a depth of 60 inches or more.

The A horizon has a clay content of 20 to 27 percent.

The C horizon has texture of loam, fine sandy loam, silt loam, or silty clay loam. Reaction is moderately alkaline or strongly alkaline.

Atepic series

The Atepic series consists of shallow, well drained, slowly permeable soils on foothills. These soils formed in residuum derived dominantly from shale. Slope is 10 to 40 percent. Elevation is 5,400 to 5,900 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy, carbonatic, mesic, shallow Xerollic Calciorthids.

Typical pedon of Atepic shaly loam, 10 to 40 percent slopes, about 6 miles east and 4 miles south of Fairfield, about 1,600 feet west and 2,600 feet south of the northeast corner of sec. 20, T. 7 S., R. 1 W.

A11—0 to 3 inches; brown (10YR 5/3) shaly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, friable, slightly sticky and plastic; common very fine roots; few fine pores; 20 percent shale fragments; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

A12—3 to 6 inches; brown (10YR 5/3) shaly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and plastic; few fine and very fine roots; few fine pores; 20 percent shale fragments; very strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C1ca—6 to 12 inches; light brownish gray (10YR 6/2) shaly silty clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine and few very fine roots; few fine pores; 25 percent shale fragments; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear wavy boundary.

C2ca—12 to 15 inches; very pale brown (10YR 8/3) shaly silty clay loam, pale brown (10YR 6/3) moist; massive; hard, firm, sticky and plastic; few very fine roots; few fine pores; 30 percent shale fragments; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual wavy boundary.

C3r—15 inches; soft shale.

The solum is 6 to 10 inches thick. The control section is 20 to 35 percent rock fragments. Soft shale is at a depth of 10 to 20 inches.

The A horizon has a clay content of 18 to 27 percent.

The C horizon has a clay content of 27 to 35 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 40 to 65 percent.

Benjamin series

The Benjamin series consists of very deep, somewhat poorly drained, slowly permeable soils on flood plains. These soils formed in mixed alluvium derived dominantly from sedimentary rocks. Slope is 0 to 2 percent. Elevation is 4,600 to 5,200 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine, montmorillonitic, mesic Fluvaquentic Haplustolls.

Typical pedon of Benjamin silty clay loam, about 4 miles north of Nephi, about 1,600 feet east and 25 feet north of the southwest corner of sec. 17, T. 12 S., R. 1 E.

Ap1—0 to 3 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; very hard, very firm, very sticky and very plastic; few coarse and medium roots, few fine and medium pores; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

Ap2—3 to 8 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few fine and medium pores; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C1—8 to 17 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and medium roots; few medium and coarse pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual wavy boundary.

C2—17 to 29 inches; light brownish gray (10YR 6/2) clay; dark grayish brown (10YR 4/2) moist; massive; very hard, very firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.7); gradual smooth boundary.

C3—29 to 36 inches; pale brown (10YR 6/3) clay; dark grayish brown (10YR 4/2) moist; common medium distinct yellowish brown (10YR 5/6) mottles; massive; very hard, very firm, very sticky; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C4—36 to 41 inches; pale brown (10YR 6/3) clay, dark grayish brown (10YR 4/2) moist; common medium prominent strong brown (7.5YR 5/6) mottles;

massive; very hard, very firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.7); gradual smooth boundary.

C5—41 to 60 inches; pale brown (10YR 6/3) clay, brown (10YR 4/3) moist; massive; very hard, very firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.7).

The mollic epipedon is 8 to 17 inches thick. A water table is at a depth of 2.5 to 6 feet throughout the year. Bedrock is at a depth of 60 inches or more.

The A horizon has a clay content of 27 to 40 percent. Reaction is moderately alkaline or strongly alkaline.

The C horizon has texture of clay or silty clay loam. It has a clay content of 35 to 50 percent. Reaction is strongly alkaline or very strongly alkaline.

Bezzant series

The Bezzant series consists of very deep, well drained, moderately permeable soils on mountainsides and hillsides. These soils formed in alluvium and colluvium derived from mixed sedimentary rocks. Slope is 6 to 60 percent. Elevation is 5,600 to 7,000 feet. Average annual precipitation is 14 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Typic Calcixerolls.

Typical pedon of Bezzant gravelly loam, 6 to 30 percent slopes, about 5 miles west of Cedar Fort, about 1,300 feet east and 100 feet south of the northwest corner of sec. 9, T. 6 S., R. 3 W.

A11—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate thin platy structure that parts to moderate fine granular; soft, friable, slightly sticky and plastic; common very fine and few fine and medium roots; few very fine pores; 2 percent stones and 20 percent gravel; slightly calcareous; moderately alkaline (pH 8.0); clear smooth boundary.

A12—4 to 13 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure that parts to moderate fine granular; slightly hard, friable, slightly sticky and plastic; common fine and few very fine roots; few fine and few very fine pores; 30 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); gradual smooth boundary.

C1ca—13 to 28 inches; light grayish brown (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots; few fine pores; 30 percent gravel and 10 percent stones; strongly calcareous, carbonates disseminated and in coatings on undersides of rock fragments; strongly alkaline (pH 8.8); clear smooth boundary.

C2ca—28 to 41 inches; light gray (10YR 7/2) very stony loam; grayish brown (10YR 5/2) moist; massive; hard, friable, slightly sticky and plastic; few fine and very fine roots; few very fine pores; 30 percent stones and 20 percent gravel; strongly calcareous, carbonates disseminated and in coatings on undersides of rock fragments; strongly alkaline (pH 9.0); gradual wavy boundary.

C3ca—41 to 54 inches; light gray (10YR 7/2) very cobbly loam, grayish brown (10YR 5/2) moist; massive; hard, friable, slightly sticky and slightly plastic; few coarse, medium, and fine roots; 30 percent cobbles and 30 percent gravel; very strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.7); gradual wavy boundary.

C4—54 to 63 inches; light gray (10YR 7/2) very stony loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and plastic; few fine, medium, and coarse roots; 60 percent stones; strongly calcareous, carbonates disseminated and in pendants on undersides of rock fragments; strongly alkaline (pH 8.8).

The mollic epipedon is 8 to 13 inches thick. The control section is 35 to 60 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon is 20 to 35 percent rock fragments. Reaction is neutral or mildly alkaline. The calcium carbonate equivalent is 2 to 20 percent.

The Cca horizon has texture of very gravelly loam or very cobbly loam or very stony loam. It is 35 to 60 percent rock fragments. Reaction is mildly alkaline to strongly alkaline. The calcium carbonate equivalent is 15 to 40 percent.

Birdow series

The Birdow series consists of very deep, well drained, moderately permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone, sandstone, and quartzite. Slope is 0 to 2 percent. Elevation is 5,000 to 5,200 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed, mesic Cumulic Haploxerolls.

Typical pedon of Birdow loam about 1 mile northeast of Cedar Fort, about 800 feet west and 1,300 feet south of the northwest corner of sec. 32, T. 5 S., R. 2 W.

A11—0 to 3 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, friable, sticky and plastic; common very fine roots; few fine and medium pores; mildly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.
A12—3 to 7 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, sticky and plastic; few fine and very fine roots; few medium pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.
C1—7 to 19 inches; grayish brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, friable, sticky and plastic; common very fine and few fine roots; few fine and medium pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.
C2—19 to 34 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, friable, sticky and plastic; few fine and very fine roots; few fine and medium pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.
C3—34 to 52 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, friable, sticky and plastic; few medium very fine roots; few medium and fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.
C4—52 to 60 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; soft, friable, sticky and plastic; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8).

The mollic epipedon is 33 to 52 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. Reaction is moderately alkaline or strongly alkaline.

The C horizon has a clay content of 18 to 27 percent. It is 0 to 5 percent rock fragments.

Borvant series

The Borvant series consists of shallow, somewhat excessively drained, moderately permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone and sandstone. Slope is 2 to 60 percent. Elevation is 4,700 to 7,000 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic, shallow Aridic Petrocalcic Palexerolls.

Typical pedon of Borvant cobbly loam, 2 to 8 percent slopes, about 3 miles north of Cedar Fort, about 800 feet east and 1,700 feet south of the southwest corner of sec. 19, T. 5 S., R. 2 W.

A11—0 to 2 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure that parts to moderate medium granular; soft, firm, slightly sticky and slightly plastic; common very fine and few fine roots; common fine pores; 15 percent cobbles and 15 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.
A12—2 to 9 inches; grayish brown (10YR 5/2) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; few medium, fine, and very fine roots; common fine pores; 15 percent cobbles and 20 percent gravel and hardpan fragments; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.
C1ca—9 to 19 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; 45 percent gravel and hardpan fragments; very strongly calcareous, disseminated carbonates in fine hardpan fragments; strongly alkaline (pH 8.6); abrupt smooth boundary.
C2cam—19 to 26 inches; indurated lime cemented hardpan.
C3—26 to 60 inches; stratified layers of very gravelly loam and indurated hardpan.

The mollic epipedon is 8 to 11 inches thick. The petrocalcic horizon is at a depth of 10 to 20 inches. The control section is 35 to 60 percent rock fragments.

The A1 horizon has a clay content of 10 to 18 percent. It is 20 to 35 percent rock fragments. Reaction is moderately alkaline or strongly alkaline.

The Cca horizon has texture of very gravelly loam or very cobbly loam. It has a clay content of 10 to 18 percent. It is 35 to 60 percent rock fragments. The carbonate content is 40 to 60 percent.

The Ccam horizon is 35 to 60 percent rock fragments. The calcium carbonate equivalent is 40 to 60 percent.

Bramwell series

The Bramwell series consists of very deep, somewhat poorly drained, slowly permeable soils on lake plains and low lake terraces. These soils formed in mixed lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 1 percent. Elevation is 4,500 to 4,900 feet.

Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Aquic Calciorthids.

Typical pedon of Bramwell silt loam about 1 mile north of Fairfield, about 1,800 feet north and 600 feet west of the southeast corner of sec. 29, T. 6 S., R. 2 W.

A11—0 to 3 inches; light brownish gray (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure; soft, friable, sticky and plastic; common fine and medium and few very fine roots; few very fine pores; moderately saline; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0); clear smooth boundary.

A12—3 to 7 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium and few very fine roots; few very fine pores; strongly saline; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C1ca—7 to 17 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; few fine and very fine roots; few very fine pores; strongly saline; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.2); gradual smooth boundary.

C2ca—17 to 27 inches; light gray (10YR 7/2) silty clay loam, grayish brown (2.5YR 5/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine and very fine roots; few fine and very fine pores; strongly saline; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.4); gradual smooth boundary.

C3ca—27 to 40 inches; light gray (2.5YR 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; few fine distinct strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; hard, firm, sticky and plastic; few fine and very fine roots; few very fine pores; slightly saline; very strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.6); clear smooth boundary.

C4—40 to 60 inches; light gray (2.5YR 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; few fine distinct strong brown (7.5YR 5/6) mottles; massive; very hard, firm, sticky and plastic; slightly saline; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.4).

The solum is 7 to 15 inches thick. A water table is present at a depth of 2.5 to 5 feet throughout the year. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. Reaction is strongly alkaline or very strongly alkaline. Electrical conductivity of the saturation extract is 8 to 16 millimhos.

The Cca horizon has a clay content of 27 to 35 percent. Electrical conductivity of the saturation extract is 8 to 16 millimhos.

Broadhead series

The Broadhead series consists of very deep, well drained, slowly permeable soils on mountainsides and alluvial fans. These soils formed in alluvium and colluvium derived dominantly from andesite, basalt, and quartzite. Slope is 3 to 70 percent. Elevation is 5,800 to 7,000 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are fine, montmorillonitic, frigid Pachic Argixerolls.

Typical pedon of Broadhead loam, 3 to 25 percent slopes, about 5 miles northeast of Cedar Fort, about 1,000 feet east and 1,400 feet south of the northwest corner of sec. 33, T. 4 S., R. 2 W.

A11—0 to 2 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 3/2) moist; weak medium platy structure that parts to moderate fine granular; soft, friable, slightly sticky and slightly plastic; common very fine and few fine roots; few fine pores; neutral (pH 6.8); abrupt smooth boundary.

A12—2 to 6 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 3/2) moist; moderate medium platy structure that parts to moderate fine subangular blocky; soft, friable, sticky and plastic; few medium, fine, and very fine roots; few medium, fine, and very fine pores; neutral (pH 6.8); abrupt smooth boundary.

B1—6 to 12 inches; grayish brown (10YR 5/2) clay loam, very dark brown (10YR 3/2) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; few medium, fine, and very fine roots; few medium and fine pores; neutral (pH 6.8); clear smooth boundary.

B21t—12 to 21 inches; brown (10YR 5/3) clay, very dark grayish brown (10YR 3/2) moist; strong angular blocky structure; very hard, very firm, very sticky and very plastic; few fine and medium roots; few fine and medium pores; common moderately thick clay films; neutral (pH 7.0); gradual wavy boundary.

B22t—21 to 29 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; strong angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine and very fine pores; common moderately thick clay films; neutral (pH 7.0); gradual wavy boundary.

B23t—29 to 43 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few fine and very fine pores; thin continuous clay films; neutral (pH 7.0); gradual wavy boundary.

C—43 to 62 inches; pale brown (10YR 6/3) clay, dark brown (10YR 3/3) moist; massive; hard, very firm, very sticky and very plastic; few thin clay films; neutral (pH 7.0).

The solum is 30 to 53 inches thick. The mollic epipedon is 30 to 53 inches thick. The control section is 0 to 20 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. It is 0 to 20 percent rock fragments.

The B2t horizon has texture of clay loam or clay. It has a clay content of 35 to 55 percent. It is 0 to 15 percent rock fragments.

The C horizon has texture of clay loam, silty clay loam, or clay. It has a clay content of 35 to 55 percent. It is 0 to 15 percent rock fragments.

Calita series

The Calita series consists of very deep, well drained, moderately permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone and sandstone. Slope is 2 to 15 percent. Elevation is 5,000 to 6,500 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed, mesic Aridic Calcixerolls.

Typical pedon of Calita loam, 4 to 8 percent slopes, about 7 miles east of Cedar Fort, about 600 feet west and 600 feet south of the northeast corner of sec. 5, T. 6 S., R. 1 W.

Ap—0 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, friable, sticky and plastic; few very fine roots; common very fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

B2—7 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine roots; common very fine pores and few fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C1ca—12 to 18 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C2ca—18 to 30 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C3ca—30 to 39 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C4—39 to 53 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.2); gradual smooth boundary.

C5—53 to 60 inches; light yellowish brown (10YR 6/4) loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and plastic; moderately calcareous, disseminated carbonates; very strongly alkaline (pH 9.6).

The solum is 12 to 14 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. It is 7 to 14 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 3 to 15 percent.

The B2 horizon has texture of loam or silt loam. It has a clay content of 18 to 27 percent. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 20 percent.

The C horizon has texture of loam or sandy loam. It has a clay content of 18 to 27 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 15 to 40 percent.

Calpac series

The Calpac series consists of deep, well drained, moderately permeable soils on mountainsides. These soils formed in colluvium derived dominantly from limestone, quartzite, and sandstone. Slope is 30 to 70 percent. Elevation is 6,000 to 7,500 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Calcic Pachic Haploxerolls.

Typical pedon of a Calpac very cobbly loam in an area of Calpac-Agassiz complex, 30 to 70 percent slopes,

about 8 miles north of Cedar Fort, about 2,100 feet west and 400 feet south of the northeast corner of sec. 1, T. 5 S., R. 3 W.

A11—0 to 3 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; few very fine pores; 20 percent of surface covered by cobbles and gravel; 60 percent cobbles in soil matrix; mildly alkaline (pH 7.6); clear smooth boundary.

A12—3 to 10 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few medium and fine roots; few medium and fine pores; 60 percent cobbles; mildly alkaline (pH 7.8); gradual smooth boundary.

A13—10 to 21 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine and very fine roots; few medium and fine pores; 40 percent cobbles and 20 percent gravel; mildly alkaline (pH 7.8); gradual smooth boundary.

B2—21 to 34 inches; dark yellowish brown (10YR 4/4) very flaggy loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine, medium, and very fine roots; few medium and very fine pores; 40 percent flagstones and 20 percent gravel; slightly calcareous, carbonates in coatings on undersides of rock fragments, noncalcareous soil matrix; moderately alkaline (pH 8.0); gradual wavy boundary.

Cca—34 to 41 inches; brown (10YR 4/3) extremely stony loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots matted on bedrock; 65 percent stones, 15 percent gravel; strongly calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.4); abrupt wavy boundary.

R—41 inches; limestone.

The solum is 23 to 43 inches thick. The mollic epipedon is 21 to 34 inches thick. The control section is 50 to 70 percent rock fragments. Bedrock is at a depth of 40 to 60 inches.

The A1 horizon has a clay content of 20 to 25 percent. It is 35 to 60 percent rock fragments. Reaction is neutral or mildly alkaline.

The B2 horizon has a clay content of 22 to 27 percent. It is 50 to 70 percent rock fragments. The calcium carbonate equivalent is 1 to 15 percent.

The Cca horizon has a clay content of 22 to 27 percent. It is 50 to 70 percent rock fragments. The calcium carbonate equivalent is 15 to 22 percent.

Checkett series

The Checkett series consists of shallow, excessively drained, moderately permeable soils on hillsides. These soils formed in residuum and colluvium derived dominantly from igneous rocks. Slope is 8 to 40 percent. Elevation is 5,000 to 6,000 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids.

Typical pedon of Checkett stony loam in an area of Checkett, moist-Rock outcrop complex, 8 to 40 percent slopes, about 5 miles south and 6 miles east of Fairfield, about 3,600 feet east and 400 feet south of the northwest corner of sec. 29, T. 7 S., R. 1 W.

A1—0 to 2 inches; pale brown (10YR 6/3) stony loam, dark brown (10YR 3/3) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine vesicular pores; 5 percent stones, 10 percent cobbles, and 10 percent gravel; slightly calcareous, disseminated carbonates; moderately alkaline (pH 8.0); abrupt smooth boundary.

B21t—2 to 6 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine and medium roots; few fine and medium pores; few thin clay films; 5 percent stones, 10 percent cobbles, and 25 percent gravel; slightly calcareous, disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

B22t—6 to 12 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; few fine pores; common thin clay films; 5 percent stones, 10 percent cobbles, and 35 percent gravel; slightly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

C—12 to 18 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 15 percent stones, 25 percent cobbles, and 25 percent gravel; moderately calcareous; disseminated carbonates; strongly alkaline (pH 8.6); abrupt smooth boundary.

R—18 inches; basalt.

The solum is 10 to 20 inches thick. The control section is 35 to 50 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

The A1 horizon has a clay content of 18 to 27 percent. It is 20 to 35 percent rock fragments.

The B2t horizon has a clay content of 27 to 35 percent. It is 35 to 50 percent rock fragments.

The C horizon has a content of 18 to 27 percent. It is 60 to 75 percent rock fragments. The calcium carbonate equivalent is 0 to 8 percent.

Cheebe series

The Cheebe series consists of very deep, well drained, slowly permeable soils on lake terraces. These soils formed in mixed lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 1 percent. Elevation is 4,800 to 4,850 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine, carbonatic, mesic Xerollic Natrargids.

Typical pedon of Cheebe silty clay loam, about 2 miles east and 1 mile north of Fairfield, about 1,300 feet south and 20 feet east of the northwest corner of sec. 22, T. 6 S., R. 2 W.

A11—0 to 2 inches; light brownish gray (10YR 6/2) silty clay loam, grayish brown (10YR 5/2) moist; weak medium platy structure; soft, friable, slightly sticky and plastic; few very fine roots; common very fine vesicular pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary.

A12—2 to 4 inches; light brownish gray (10YR 6/2) silty clay loam, grayish brown (10YR 5/2) moist; moderate thin platy structure; slightly hard, firm, sticky and plastic; few very fine roots; common very fine vesicular pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary.

A13—4 to 8 inches; light brownish gray (10YR 6/2) silty clay loam, grayish brown (10YR 5/2) moist; weak medium platy structure that parts to strong fine granular; slightly hard, firm, sticky and very plastic; few fine and very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.6); clear smooth boundary.

B1—8 to 15 inches; light gray (10YR 7/2) silty clay; light brownish gray (2.5Y 6/2) moist; strong fine subangular blocky structure; hard, very firm, very sticky and very plastic; few very fine, few fine and medium roots; few fine pores; very strongly calcareous, carbonates disseminated and in fine masses; very strongly alkaline (pH 9.6); clear smooth boundary.

B21t—15 to 20 inches; light gray (10YR 7/2) silty clay; light brownish gray (2.5Y 6/2) moist; strong fine subangular blocky structure; hard, very firm, very sticky and very plastic; few fine medium and coarse roots; few fine pores; very strongly calcareous, carbonates disseminated and in fine veins and masses; very strongly alkaline (9.6); clear smooth boundary.

B22t—20 to 31 inches; light gray (10YR 7/1) silty clay; light brownish gray (2.5Y 6/2) moist; moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; few fine and medium roots; few fine pores; common thin clay films; strongly calcareous, carbonates in masses and veins, generally in peds; very strongly alkaline (pH 9.6); clear smooth boundary.

B3ca—31 to 44 inches; light gray (10YR 7/1) silty clay; light brownish gray (2.5Y 6/2) moist; common medium distinct dark brown (10YR 4/3) mottles; weak medium prismatic structure that parts to strong medium, angular blocky; very hard, very firm, very sticky and very plastic; few fine gypsum masses on peds; very strongly calcareous, carbonates disseminated and in fine masses; very strongly alkaline (pH 9.6); clear smooth boundary.

C1ca—44 to 55 inches; white (10YR 8/1) silty clay loam; light gray (5Y 7/1) moist; strong medium platy structure; hard, firm, sticky and plastic; few fine and medium roots; very strongly calcareous, carbonates disseminated and in shells and diatoms; strongly alkaline (pH 9.0); clear smooth boundary.

C2—55 to 65 inches; light gray (5Y 7/1) clay; light olive gray (5Y 6/2) moist; strong coarse angular blocky structure; extremely hard, very firm, very sticky and very plastic; few very fine roots; strongly calcareous, carbonates disseminated and in coatings on peds; very strongly alkaline (pH 9.6).

The solum is 27 to 43 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has texture of fine sandy loam or silty clay loam. It has a clay content of 15 to 35 percent. The carbonate content is 15 to 40 percent.

The B2t horizon has texture of clay, silty clay, or silty clay loam. It has clay content of 35 to 55 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 40 to 50 percent.

The Cca horizon has texture of clay, silty clay, or silty clay loam. It has a clay content of 35 to 55 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 40 to 55 percent.

Dagor series

The Dagor series consists of very deep, well drained, moderately permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from quartzite,

andesite, rhyolite, and latite. Slope is 2 to 8 percent. Elevation is 5,400 to 6,200 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed, mesic Cumulic Haploxerolls.

Typical pedon of Dagor loam, 2 to 8 percent slopes, about 6 miles south of Eureka, about 2,300 feet east and 200 feet south of the northwest corner of sec. 18, T. 11 S., R. 2 W.

A11—0 to 4 inches; grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak medium platy structure that parts to weak fine granular; soft, friable, sticky and plastic; common very fine roots; few very fine pores; neutral (pH 6.6); clear smooth boundary.

A12—4 to 10 inches; brown (10YR 4/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, friable sticky and plastic; common very fine roots; common very fine pores; neutral (pH 6.6); clear smooth boundary.

A13—10 to 20 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine and fine pores; neutral (pH 6.6); clear smooth boundary.

A14—20 to 29 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; many very fine and common fine pores; some lime in fine veins between peds; neutral (pH 7.0); clear smooth boundary.

C1—29 to 37 inches; yellowish brown (10YR 5/4) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine pores; some lime in fine veins between peds; neutral (pH 7.0); gradual smooth boundary.

C2—37 to 49 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; massive; hard, friable, sticky and plastic; moderately calcareous, carbonates disseminated and in fine veins; mildly alkaline (pH 7.6); gradual smooth boundary.

C3—49 to 60 inches; yellowish brown (10YR 5/4) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, slightly sticky and slightly plastic; moderately calcareous, disseminated carbonates; mildly alkaline (pH 7.6).

The solum is 29 to 54 inches thick. The mollic epipedon is 29 to 54 inches thick. The clay content ranges from 18 to 27 percent. Bedrock is at a depth of 60 inches or more.

Deer Creek series

The Deer Creek series consists of very deep, well drained, slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from quartzite, sandstone, and igneous rocks. Slope is 6 to 25 percent. Elevation is 5,600 to 7,000 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are fine, montmorillonitic, frigid Typic Palexerolls.

Typical pedon of Deer Creek cobbly loam, 6 to 25 percent slopes, about 4 miles north of Cedar Fort, about 1,800 feet east and 250 feet south of the northwest corner of sec. 24, T. 5 S., R. 3 W.

A1—0 to 7 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, sticky and plastic; many very fine roots; few medium and fine pores; 2 percent of surface is covered with stones; 10 percent cobbles and 10 percent gravel in soil matrix; neutral (pH 6.6); clear smooth boundary.

B21t—7 to 20 inches; yellowish brown (10YR 5/4) cobbly clay, dark brown (10YR 3/3) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; few fine, very fine, medium, and coarse roots; common very fine pores; common thin clay films; 20 percent cobbles; neutral (pH 6.8); clear wavy boundary.

B22t—20 to 35 inches; yellowish brown (10YR 5/4) cobbly clay, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few fine roots; common moderately thick clay films; 30 percent cobbles; neutral (pH 7.0); clear wavy boundary.

C1ca—35 to 45 inches; light yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few fine and very fine roots; common moderately thick clay films; 40 percent cobbles; slightly calcareous, carbonates disseminated and in coatings on rock fragments; mildly alkaline (pH 7.6); gradual irregular boundary.

C2ca—45 to 60 inches; pale brown (10YR 6/3) very gravelly clay loam, yellowish brown (10YR 5/4) moist; hard, firm, very sticky and very plastic; few thin clay films; 50 percent gravel and 10 percent cobbles; strongly calcareous, carbonates disseminated in masses and in coatings on rock fragments; moderately alkaline (pH 8.0).

The solum is 38 to 45 inches thick. The mollic epipedon is 7 to 15 inches thick. Carbonates are at a

depth of 26 to 45 inches. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. It is 25 to 35 percent rock fragments.

The B2t horizon has texture of cobbly clay or gravelly clay. It has a clay content of 40 to 60 percent. It is 25 to 35 percent rock fragments. Reaction is neutral to moderately alkaline.

The Cca horizon has texture of very gravelly clay loam or very cobbly clay loam. It has a clay content of 27 to 40 percent. It is 45 to 75 percent rock fragments.

Donnardo series

The Donnardo series consists of very deep, well drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from quartzite, limestone, and sandstone. Slopes are 2 to 40 percent. Elevation is 4,500 to 6,200 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Ardic Calcixerolls.

Typical pedon of Donnardo stony loam, 2 to 8 percent slopes, about 1.5 miles southwest of Cedar Fort, about 1,600 feet east and 200 feet north of the southwest corner of sec. 7, T. 6 S., R. 2 W.

A11—0 to 4 inches; grayish brown (10YR 5/2) stony fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure that parts to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few very fine and medium roots; common very fine pores; 5 percent of surface covered with stones; slightly calcareous, disseminated carbonates; mildly alkaline (pH 7.6); clear smooth boundary.

A12—4 to 10 inches; brown (10YR 5/3) very cobbly fine sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few very fine roots; few fine and very fine pores; 25 percent gravel and 25 percent cobbles; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); gradual smooth boundary.

C1ca—10 to 27 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few medium, fine, and very fine roots; few fine and very fine pores; 25 percent cobbles and 10 percent gravel; strongly calcareous, carbonates disseminated and in veins; moderately alkaline (pH 8.2); clear smooth boundary.

C2ca—27 to 39 inches; pale brown (10YR 6/3) very cobbly sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine and very fine roots; few fine pores; 30 percent cobbles and 20 percent gravel; strongly calcareous, carbonates disseminated, in veins, and in coatings on rock fragments; moderately alkaline (pH 8.2); clear smooth boundary.

C3—39 to 48 inches; pale brown (10YR 6/3) extremely cobbly fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly plastic; few fine roots; 40 percent gravel and 30 percent cobbles; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); gradual smooth boundary.

C4—48 to 60 inches; pale brown (10YR 6/3) extremely cobbly fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly plastic; few fine roots; 40 percent gravel and 30 percent cobbles; moderately calcareous; carbonates disseminated and in coatings on undersides of rock fragments; moderately alkaline (pH 8.0).

The mollic epipedon is 8 to 19 percent rock fragments, and the control section is 35 to 75 percent rock fragments. Secondary carbonates are at a depth of 8 to 19 inches. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 15 to 25 percent. It is 15 to 25 percent rock fragments. Reaction is mildly alkaline to strongly alkaline. The calcium carbonate equivalent is 1 to 20 percent.

The Cca horizon has texture of very gravelly loam, very cobbly loam, very cobbly sandy loam, or very stony loam. It has a clay content of 15 to 25 percent. It is 35 to 70 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 40 percent.

Doyce series

The Doyce series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Slope is 2 to 8 percent. Elevation is 5,000 to 6,300 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed, mesic Aridic Calcic Argixerolls.

Typical pedon of a Doyce loam in an area of Mountainville, sandy substratum-Doyce complex, 2 to 4 percent slopes, about 3 miles northeast of Cedar Fort, about 2,000 feet east and 2,600 feet south of the northwest corner of sec. 28, T. 5 S., R. 2 W.

Ap1—0 to 5 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium platy structure that parts to moderate medium angular blocky; soft, friable, slightly sticky and plastic; common very fine roots; common very fine pores; moderately alkaline (pH 8.0); clear smooth boundary.

Ap2—5 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate thick platy structure that parts to moderate medium angular blocky; slightly hard, friable, slightly sticky and plastic; few very fine roots; few very fine pores; moderately alkaline (pH 8.0); clear smooth boundary.

B2t—10 to 19 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine pores; few thin clay films; mildly alkaline (pH 7.8); clear smooth boundary.

C1ca—19 to 31 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; few very fine roots; few fine and very fine pores; 30 percent gravel; strongly calcareous, carbonates in veins and in coatings on rock fragments; strongly alkaline (pH 8.6); gradual smooth boundary.

C2ca—31 to 36 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and plastic; few very fine roots; few very fine pores; 35 percent gravel; moderately calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.6); clear smooth boundary.

C3—36 to 60 inches; very pale brown (10YR 7/3) gravelly heavy loam, brown (10YR 5/3) moist; massive, hard, firm, sticky and plastic; common very fine and few fine pores; 20 percent gravel; moderately calcareous; carbonates in veins and disseminated; strongly alkaline (pH 8.6).

The solum is 14 to 33 inches thick. The mollic epipedon is 7 to 11 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 24 percent. Reaction is mildly alkaline or moderately alkaline.

The B2t horizon has a clay content of 27 to 35 percent. Reaction is mildly alkaline or moderately alkaline.

The Cca horizon has a clay content of 18 to 27 percent. It is 10 to 35 percent rock fragments. Reaction is moderately alkaline or strongly alkaline.

Dry Creek series

The Dry Creek series consists of very deep, well drained, slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from igneous rocks. Slope is 4 to 15 percent. Elevation is 4,900 to 6,200 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine, montmorillonitic, mesic Typic Palexerolls.

Typical pedon of Dry Creek cobbly loam, 4 to 15 percent slopes, about 4 miles southwest of Camp Williams, about 2,200 feet west and 1,300 feet south of the northeast corner of sec. 7, T. 5 S., R. 1 W.

A11—0 to 3 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, slightly sticky and plastic; common very fine roots; common very fine pores; 10 percent cobbles and 10 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

A12—3 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common fine pores; 15 percent gravel; neutral (pH 6.8); clear smooth boundary.

B21t—10 to 18 inches; yellowish brown (10YR 5/4) cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure that parts to strong medium angular blocky; extremely hard, very firm, very sticky and very plastic; few very fine roots; 10 percent cobbles and 10 percent gravel; neutral (pH 7.0); gradual smooth boundary.

B22t—18 to 26 inches; yellowish brown (10YR 5/4) cobbly clay; dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure that parts to strong fine angular blocky; extremely hard, very firm, very sticky and very plastic; 10 percent cobbles and 10 percent gravel; slightly calcareous, carbonates in very fine veins; mildly alkaline (pH 7.6); gradual wavy boundary.

B31ca—26 to 32 inches; light yellowish brown (10YR 6/4) gravelly clay, yellowish brown (10YR 5/4) moist; weak medium prismatic structure that parts to strong medium angular blocky; extremely hard, very firm, very sticky and very plastic; 15 percent gravel and 5 percent cobbles; slightly calcareous, carbonates in fine veins and in coatings on gravel; moderately alkaline (pH 8.4); gradual wavy boundary.

B32ca—32 to 40 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; 35 percent gravel; moderately calcareous, carbonates disseminated in veins and in coatings on rock fragments; strongly alkaline (pH 8.6); gradual wavy boundary.

Cca—40 to 60 inches; white (10YR 8/2) very gravelly clay loam; very pale brown (10YR 7/4) moist; massive; hard, friable, sticky and plastic; 25 percent gravel and 10 percent cobbles; very strongly calcareous, carbonates disseminated and in masses; strongly alkaline (pH 8.8).

The solum is 28 to 44 inches thick. The mollic epipedon is 10 to 15 inches thick. The control section is 20 to 35 percent rock fragments. Carbonates are at a depth of 18 to 44 inches. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. It is 15 to 35 percent rock fragments.

The B2t horizon has a clay content of 40 to 60 percent. It is 20 to 35 percent rock fragments. Reaction is neutral or mildly alkaline.

The Cca horizon has texture of very gravelly clay loam or very gravelly clay. It has a clay content of 30 to 50 percent and is 20 to 60 percent rock fragments. The calcium carbonate equivalent is 25 to 55 percent.

Duggins series

The Duggins series consists of very deep, well drained, slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone, sandstone, and shale. Slope is 0 to 2 percent. Elevation is 4,500 to 5,000 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine, mixed (calcareous), mesic Xeric Torrifluvents.

Typical pedon of Duggins loam about 4 miles south and 8 miles west of Levan, about 1,200 feet east and 1,500 feet north of the southwest corner of sec. 25, T. 15 S., R. 2 W.

A11—0 to 3 inches; brown (10YR 5/3) loam, dark grayish brown (10YR 4/2) moist; moderate thick platy structure that parts to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few medium and fine roots; few very fine pores; few fine gypsum veins; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.8); abrupt smooth boundary.

A12—3 to 5 inches; brown (10YR 5/3) loam, dark grayish brown (10YR 4/2) moist; strong fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few medium and fine roots; few very fine pores; few fine gypsum veins; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

C1—5 to 14 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure that parts to moderate fine granular; slightly hard, firm, sticky and plastic; few fine and medium roots; few fine gypsum veins; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

C2—14 to 25 inches; light brown (7.5YR 6/4) clay, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, very sticky and plastic; few fine and very fine roots; common very fine pores; common fine gypsum veins; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C3—25 to 35 inches; light brown (7.5YR 6/4) clay, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, very firm, very sticky and very plastic; few fine and very fine roots; common very fine pores; few fine gypsum veins; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

C4—35 to 46 inches; pink (5YR 7/3) clay, yellowish red (5YR 5/6) moist; weak medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; common very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.4); clear smooth boundary.

C5—46 to 60 inches; pink (5YR 7/3) clay loam, reddish brown (5YR 5/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 5 to 13 inches thick. Reaction is moderately alkaline or strongly alkaline throughout. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 20 to 27 percent. The calcium carbonate equivalent is 15 to 25 percent.

The C horizon has texture of clay loam or clay. It has a clay content of 35 to 60 percent. The calcium carbonate equivalent is 15 to 30 percent.

Firmage series

The Firmage series consists of very deep, well drained, moderately permeable soils on alluvial fans.

These soils formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Slope is 2 to 4 percent. Elevation is 4,500 to 5,500 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed, mesic Xerollic Calciorthids.

Typical pedon of Firmage gravelly loam, dry, 2 to 4 percent slopes, about 8 miles southeast of Fairfield, about 600 feet west and 200 feet south of the northeast corner of sec. 1, T. 8 S., R. 2 W.

A1—0 to 2 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium platy structure that parts to weak medium subangular blocky; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few fine and very fine pores; 15 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); abrupt smooth boundary.

B2—2 to 9 inches; very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few fine and medium pores; 15 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); clear wavy boundary.

Cca—9 to 17 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; few fine pores; 20 percent gravel; strongly calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.3); gradual wavy boundary.

C1ca—17 to 32 inches; very pale brown (10YR 8/3) cobbly loam, pale brown (10YR 6/3) moist; massive; hard, friable, slightly sticky and plastic; few fine and very fine roots; few very fine pores; 20 percent cobbles and 10 percent pebble-size durinodes; strongly calcareous, carbonates disseminated and in masses, slightly cemented by silica; strongly alkaline (pH 8.8); clear wavy boundary.

C2ca—32 to 42 inches; white (10YR 8/2) gravelly loam, pale brown (10YR 6/3) moist; massive; hard, friable, slightly sticky and plastic; 20 percent gravel and a few durinodes; strongly calcareous, carbonates disseminated in masses, slightly cemented by silica; strongly alkaline (pH 8.8); gradual wavy boundary.

C3—42 to 60 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and plastic; 15 percent gravel; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.2).

The solum is 11 to 17 inches thick. The control section is 15 to 35 percent rock fragments.

The A1 horizon has a clay content of 10 to 20 percent. It is 10 to 25 percent rock fragments.

The B2 horizon has a clay content of 18 to 24 percent. It is 10 to 25 percent rock fragments. The calcium carbonate equivalent is 15 to 20 percent.

The Cca horizon has a texture of gravelly loam or cobbly loam. It has a clay content of 18 to 27 percent. It is 15 to 35 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 20 to 35 percent.

Flygare series

The Flygare series consists of very deep, well drained, moderately permeable soils on mountainsides. These soils formed in colluvium derived dominantly from limestone, quartzite, and sandstone. Slope is 8 to 70 percent. Elevation is 7,000 to 10,400 feet. Average annual precipitation is 22 to 30 inches, and mean annual air temperature is 36 to 45 degrees F.

These soils are loamy-skeletal, mixed Cryic Pachic Paleborolls.

Typical pedon of Flygare loam, 30 to 70 percent slopes, about 9 miles north and 3 miles west of Cedar Fort, about 1,000 feet north and 200 feet east of the southwest corner of sec. 14, T. 4 S., R. 3 W.

A11—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; common fine roots; few fine pores; 10 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

A12—4 to 20 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; 10 percent gravel; slightly acid (pH 6.4); clear irregular boundary.

A2—20 to 31 inches; light brownish gray (10YR 6/2) very cobbly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine and medium roots; few fine and very fine pores; 30 percent gravel and 10 percent cobbles; slightly acid (pH 6.2); clear wavy boundary.

B2t—31 to 49 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3); moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; few fine roots; few fine pores; thin continuous clay films; 50 percent gravel and 10 percent cobbles; slightly acid (pH 6.5); gradual wavy boundary.

B3—49 to 62 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; few fine roots; few thin clay films on gravel; 40 percent gravel and 30 percent cobbles; slightly acid (pH 6.5).

The solum is 47 to 62 inches thick. The mollic epipedon is 18 to 25 inches thick. The control section is 35 to 70 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 10 to 18 percent. It is 15 to 35 percent rock fragments.

The A2 horizon has a clay content of 18 to 27 percent. It is 20 to 60 percent rock fragments. Reaction is slightly acid to mildly alkaline.

The B2t horizon has texture of very gravelly clay loam or very cobbly clay loam. It has a clay content of 27 to 35 percent and is 35 to 60 percent rock fragments. Reaction is neutral to moderately alkaline.

The B3 horizon has texture of very gravelly loam or extremely cobbly loam. It has a clay content of 18 to 27 percent. It is 35 to 60 percent rock fragments.

Fontreen series

The Fontreen series consists of very deep, well drained, moderately rapidly permeable soils on mountainsides and alluvial fans. These soils formed in alluvium and colluvium derived dominantly from limestone and sandstone. Slope is 3 to 60 percent. Elevation is 5,200 to 6,800 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, frigid Aridic Calcixerolls.

Typical pedon of Fontreen stony loam, 25 to 60 percent slopes, about 3 miles southwest of Cedar Fort, about 1,200 feet south and 1,400 feet west of the northeast corner of sec. 14, T. 6 S., R. 3 W.

A11—0 to 4 inches; grayish brown (10YR 5/2) stony loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure that parts to moderate fine granular; soft, friable, slightly sticky and plastic; common very fine roots; common fine pores; 15 percent of surface covered with stones; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

A12—4 to 10 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and plastic; common very fine roots; few fine pores; 30 percent cobbles and 25 percent gravel; strongly calcareous, carbonates disseminated and in fine limestone fragments; moderately alkaline (pH 8.0); clear smooth boundary.

C1—10 to 15 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine roots; few fine and very fine pores; 40 percent gravel and 10 percent cobbles; strongly calcareous, carbonates disseminated in coatings on rock fragments, and in fine masses; strongly alkaline (pH 8.8); clear smooth boundary.

C2—15 to 25 inches; very pale brown (10YR 7/3) very cobbly loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; few medium, fine, and very fine roots; few fine pores; 30 percent cobbles and 20 percent gravel; very strongly calcareous, carbonates disseminated in coatings on rock fragments, and in masses; strongly alkaline (pH 9.0); clear smooth boundary.

C3ca—25 to 40 inches; white (10YR 8/2) very cobbly loam, very pale brown (10YR 7/3) moist; hard, friable, slightly sticky and plastic; few fine and medium roots; few fine and very fine pores; 30 percent cobbles and 20 percent gravel; very strongly calcareous, carbonates disseminated in coatings on rock fragments, and in masses; very strongly alkaline (pH 9.4); clear smooth boundary.

C4casi—40 to 55 inches; white (10YR 8/2) very cobbly loam, very pale brown (10YR 7/3) moist; massive; very hard, friable, slightly sticky and plastic; 50 percent cobbles and 10 percent gravel that is weakly cemented by silica; very strongly calcareous, carbonates disseminated in coatings on rock fragments, and in fine masses; very strongly alkaline (pH 9.6); gradual wavy boundary.

C5—55 to 60 inches; very pale brown (10YR 7/3) very cobbly loam, pale brown (10YR 6/3) moist; slightly hard, friable, slightly sticky and plastic; 40 percent cobbles and 20 percent gravel; very strongly calcareous, carbonates disseminated and in coatings on rock fragments; very strongly alkaline (pH 9.6).

The solum and mollic epipedon are 7 to 10 inches thick. The control section is 35 to 60 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. It is 35 to 60 percent rock fragments. The calcium carbonate equivalent is 15 to 26 percent.

The Cca horizon has texture of very gravelly loam or very cobbly loam. It has a clay content of 18 to 27 percent. It is 35 to 60 percent rock fragments. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 40 to 75 percent.

The C horizon has texture of very cobbly loam or very stony loam. It has a clay content of 18 to 27 percent. It is 35 to 80 percent rock fragments. The calcium carbonate equivalent is 40 to 70 percent.

Freedom series

The Freedom series consists of very deep, well drained, moderately slowly permeable soils on lake terraces and alluvial fans. These soils formed in lake sediment and alluvium derived dominantly from limestone, sandstone, and shale. Slope is 0 to 5 percent. Elevation is 4,500 to 5,500 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Xerollic Calciorthids.

Typical pedon of Freedom silt loam, 0 to 2 percent slopes, about 8 miles north of Goshen, about 2,600 feet east and 400 feet north of the southwest corner of sec. 22, T. 8 S., R. 1 W.

Ap1—0 to 2 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); abrupt smooth boundary.

Ap2—2 to 5 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate coarse angular blocky structure that parts to moderate fine granular; hard, friable, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary.

Ap3—5 to 8 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C1ca—8 to 15 inches; light brownish gray (10YR 6/2) silty clay loam, very dark grayish brown (2.5Y 3/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0); clear smooth boundary.

C2ca—15 to 20 inches; light brownish gray (10YR 6/2) silty clay loam, very dark grayish brown (2.5Y 3/2) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0); clear smooth boundary.

IIC3—20 to 30 inches; light gray (10YR 7/2) silty clay loam, light brownish gray (10YR 6/2) moist; massive; hard, firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.2); gradual smooth boundary.

IIC4—30 to 40 inches; light gray (10YR 7/1) silty clay loam, light brownish gray (10YR 6/2) moist; massive; hard, firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.4); gradual smooth boundary.

IC5—40 to 60 inches; light gray (10YR 7/1) silty clay, grayish brown (10YR 5/2) moist; massive; slightly hard, firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.4).

The solum is 8 to 14 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. The calcium carbonate equivalent is 3 to 25 percent.

The Cca horizon has a clay content of 27 to 35 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 20 to 40 percent.

Fridlo series

The Fridlo series consists of very deep, moderately well drained, slowly permeable soils on lake terraces. These soils formed in lacustrine deposits and alluvium derived dominantly from andesite, trachyte, and latite. Slope is 2 to 4 percent. Elevation is 4,900 to 5,000 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Typic Natrixerolls.

Typical pedon of Fridlo loam, 2 to 4 percent slopes, about 5 miles north and 2.5 miles west of Nephi, about 600 feet east and 1,500 feet south of the northwest corner of sec. 12, T. 12 S., R. 1 W.

A11—0 to 2 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate thick platy structure that parts to strong fine granular; soft, friable, slightly sticky and slightly plastic; few very fine roots; few fine and medium pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

A12—2 to 8 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate thick platy structure that parts to moderate fine granular structure; few very fine and fine roots; few fine and medium pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

B21t—8 to 16 inches; pale brown (10YR 6/3) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine pores; common thin clay films on faces of peds; strongly saline; moderately alkaline (pH 8.4); clear smooth boundary.

B22t—16 to 24 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; few very fine pores; common thin clay films on faces of peds; very strongly saline; moderately calcareous, disseminated carbonates; very strongly alkaline (pH 9.1); clear smooth boundary.

B3tca—24 to 34 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few very fine pores; few thin clay films on faces of peds; very strongly saline; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.2); clear smooth boundary.

C1ca—34 to 44 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; very strongly saline; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0); clear smooth boundary.

C2—44 to 60 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; few fine faint grayish brown (10YR 5/2) mottles; massive; hard, firm, sticky and plastic; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 24 to 27 inches thick. The mollic epipedon is 8 to 12 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent.

The B2t horizon has texture of clay loam or silty clay loam. It has a clay content of 27 to 35 percent. Reaction is moderately alkaline to very strongly alkaline. The calcium carbonate equivalent is 0 to 14 percent. The percentage of exchangeable sodium is 15 to 45. Electrical conductivity of the saturation extract is 2 to 16 millimhos.

The C horizon has texture of loam or silt loam. The calcium carbonate equivalent is 3 to 15 percent. Electrical conductivity of the saturation extract is 8 to 16 millimhos.

Genola series

The Genola series consists of very deep, well drained, moderately permeable soils on alluvial fans and flood plains. These soils formed in mixed alluvium derived dominantly from sandstone, limestone, and igneous rocks. Slope is 0 to 5 percent. Elevation is 4,500 to 5,700 feet. Average annual precipitation is 10 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed (calcareous), mesic Xeric Torrifluvents.

Typical pedon of Genola silt loam, 2 to 5 percent slopes, about 0.2 mile south of Elberta, about 1,100 feet south and 500 feet east of the northwest corner of sec. 16, T. 10 S., R. 1 W.

A11—0 to 1 inch; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure that parts to moderate thin platy; slightly hard, friable, slightly sticky and slightly plastic; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.3); abrupt smooth boundary.

A12—1 inch to 6 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.3); clear smooth boundary.

C1—6 to 15 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

C2—15 to 29 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.0); gradual smooth boundary.

C3—29 to 42 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; soft, very friable; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.6); gradual smooth boundary.

C4—42 to 60 inches; pale brown (10YR 6/3) light silt loam, brown (10YR 5/3) moist; massive; soft, very friable; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.6).

The solum is 3 to 6 inches thick. The clay content is 18 to 27 percent. The reaction is moderately alkaline or strongly alkaline throughout. Bedrock is at a depth of 60 inches or more.

Goldrun series

The Goldrun series consists of very deep, somewhat excessively drained, rapidly permeable soils on lake terraces and alluvial fans. These soils formed in windblown sand and alluvium derived dominantly from sedimentary and igneous rocks. Slope is 0 to 10 percent. Elevation is 4,500 to 5,500 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are mixed, mesic Xeric Torripsamments.

Typical pedon of Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes, about 6 miles south of Fairfield,

about 1,400 feet west and 2,050 feet north of the southeast corner of sec. 29, T. 7 S., R. 2 W.

A1—0 to 2 inches; light gray (10YR 7/2) loamy fine sand, brown (10YR 5/3) moist; single grained; loose; common very fine roots; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.
C1—2 to 11 inches; very pale brown (10YR 7/3) loamy fine sand, light yellowish brown (10YR 6/4) moist; single grained; loose; few fine and very fine roots; few fine and medium pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.
C2—11 to 26 inches; very pale brown (10YR 7/3) fine sand, yellowish brown (10YR 5/4) moist; single grained; loose; few very fine roots; few fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.
C3—26 to 48 inches; very pale brown (10YR 7/3) fine sand, yellowish brown (10YR 5/4) moist; single grained; loose; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.7); gradual smooth boundary.
C4—48 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; single grained; loose; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0).

The solum is 2 to 12 inches thick. It has a clay content of 1 to 8 percent. The reaction is moderately alkaline or strongly alkaline throughout. Bedrock is at a depth of 60 inches or more.

The C horizon has texture of loamy fine sand or fine sand.

Hamtah series

The Hamtah series consists of very deep, well drained, slowly permeable soils on mountainsides. These soils formed in colluvium derived dominantly from limestone, sandstone, quartzite, and shale. Slope is 30 to 70 percent. Elevation is 6,300 to 8,000 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 36 to 45 degrees F.

These soils are clayey-skeletal, montmorillonitic Argic Pachic Cryoborolls.

Typical pedon of Hamtah loam, 30 to 70 percent slopes, about 6 miles northwest of Cedar Fort, about 1,300 feet west and 200 feet north of the southeast corner of sec. 3, T. 5 S., R. 3 W.

A11—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; few fine pores; neutral (pH 6.6); clear smooth boundary.
A12—4 to 8 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few fine pores; slightly acid (pH 6.4); gradual smooth boundary.
A13—8 to 20 inches; very dark grayish brown (10YR 3/2) cobbly loam, very dark brown (10YR 2/2) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots; few fine pores; 15 percent cobbles; slightly acid (pH 6.2); clear wavy boundary.
B1—20 to 28 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 4/3) moist; strong fine angular blocky structure; hard, firm, sticky and very plastic; few fine and medium roots; few fine pores; few thin clay films; some clay stripping on peds; 55 percent stone and cobbles; neutral (pH 6.7); clear wavy boundary.
B21t—28 to 44 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, very firm, sticky and very plastic; few fine and medium roots; few fine pores; continuous moderately thick clay films; 55 percent gravel and cobbles; slightly acid (pH 6.4); gradual wavy boundary.
B22t—44 to 60 inches; light yellowish brown (10YR 6/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, very firm, sticky and very plastic; few fine roots; few fine pores; continuous moderately thick clay films; 60 percent cobbles and stones; slightly acid (pH 6.4).

The solum is 40 to 60 inches thick. The mollic epipedon is 17 to 21 inches thick. The control section is 35 to 70 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. It is 0 to 50 percent rock fragments. Reaction is slightly acid to mildly alkaline.

The B1 horizon has a clay content of 27 to 40 percent. It is 35 to 60 percent rock fragments.

The B2t horizon has texture of very cobbly clay or very gravelly clay. It has a clay content of 40 to 60 percent. It is 35 to 70 percent rock fragments. Reaction is slightly acid to mildly alkaline.

Hansel series

The Hansel series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from igneous rocks. Slope is 0 to 4 percent. Elevation is 5,400 to 5,700 feet. Average annual precipitation is 12 to 14

inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Xerollic Haplargids.

Typical pedon of Hansel silt loam, 2 to 4 percent slopes, about 9 miles west of Nephi, about 2,500 feet east and 1,300 feet south of the northwest corner of sec. 36, T. 12 S., R. 2 W.

Ap—0 to 6 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/4) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and few fine roots; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

B21t—6 to 12 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

B22t—12 to 21 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear wavy boundary.

C1ca—21 to 36 inches; white (10YR 8/2) silt loam, pink (7.5YR 7/4) moist; strong medium platy structure; very hard, friable, slightly sticky and slightly plastic; few very fine roots; 30 percent weakly cemented lime nodules; very strongly calcareous, carbonates disseminated and in nodules; strongly alkaline (pH 8.6); clear wavy boundary.

C2—36 to 49 inches; white (10YR 8/2) silt loam, light yellowish brown (10YR 6/4) weak medium subangular blocky structure; hard, friable, slightly plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual wavy boundary.

C3si—49 to 60 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; very hard, friable, slightly sticky and slightly plastic; 5 percent gravel; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0).

The solum is 21 to 40 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 15 to 20 percent. The calcium carbonate equivalent is 3 to 15 percent.

The B2t horizon has texture of silt loam or silty clay loam. It has a clay content of 24 to 30 percent. The calcium carbonate equivalent is 4 to 25 percent.

The Cca horizon has texture of silt loam or loam. It has a clay content of 15 to 25 percent. The calcium carbonate equivalent is 15 to 55 percent.

Harding series

The Harding series consists of very deep, well drained, slowly permeable soils on lake terraces and flood plains. These soils formed in mixed alluvium and lake sediment derived dominantly from mixed sedimentary rocks. Slope is 0 to 4 percent. Elevation is 4,500 to 5,100 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine, mixed, mesic Xerollic Natrargids.

Typical pedon of Harding silt loam about 2.5 miles west and 1 mile south of Mills, about 1,300 feet west and 800 feet north of the southeast corner of sec. 33, T. 15 S., R. 2 W.

A2—0 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, friable, sticky and slightly plastic; common very fine roots; few very fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary.

B1—4 to 10 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine and fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

B2t—10 to 23 inches; pale brown (10YR 7/3) silty clay; brown (10YR 5/3) moist; strong coarse prismatic structure that parts to strong fine angular blocky; very hard, extremely firm, very sticky and very plastic; few fine roots between peds; many moderately thick clay films on faces of peds; strongly calcareous, carbonates in soft rounded masses in peds mainly at the top of prisms; very strongly alkaline (pH 9.2); clear smooth boundary.

B3t—23 to 30 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; moderate coarse prismatic structure that parts to strong fine angular blocky; hard, extremely firm, very sticky and very plastic; few very fine roots; common thick clay films on faces of peds; strongly calcareous, carbonates disseminated and in veins and rounded masses; very strongly alkaline (pH 9.6); gradual wavy boundary.

C1cs—30 to 54 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; strong coarse angular blocky rock structure; very hard, extremely firm, very sticky and very plastic; common fine gypsum veins; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C2—54 to 60 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; platy rock structure; slightly hard, friable, slightly sticky and slightly plastic; moderately calcareous, disseminated carbonates; strongly alkaline (pH 9.0).

The solum is 10 to 32 inches thick. Bedrock is at a depth of 60 inches or more.

The A horizon has a clay content of 18 to 27 percent. Reaction is moderately alkaline to very strongly alkaline. The calcium carbonate equivalent is 10 to 30 percent. Electrical conductivity of the saturation extract is 2 to 8 millimhos.

The B horizon has texture of silty clay, silty clay loam, or clay. It has a clay content of 35 to 50 percent. Reaction is strongly alkaline or very strongly alkaline. The percentage of exchangeable sodium is 15 to 50. The calcium carbonate equivalent is 10 to 30 percent. Electrical conductivity of the saturation extract is 4 to 32 millimhos.

The C horizon has texture of silty clay, silty clay loam, or silt loam. It has a clay content of 20 to 50 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 10 to 40 percent. Electrical conductivity of the saturation extract is 10 to 40 millimhos.

Hiko Peak series

The Hiko Peak series consists of very deep, well drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone, quartzite, and sandstone. Slope is 4 to 40 percent. Elevation is 4,800 to 5,800 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Xerollic Calciorthids.

Typical pedon of Hiko Peak stony sandy loam, 4 to 8 percent slopes, about 5 miles east and 2 miles south of Fairfield, about 1,300 feet west and 800 feet south of the northeast corner of sec. 7, T. 7 S., R. 1 W.

A11—0 to 3 inches; pale brown (10YR 6/3) stony sandy loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure that parts to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine pores; 5 percent stones, 5 percent cobbles, and 10 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

A12—3 to 7 inches; pale brown (10YR 6/3) stony sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; 5 percent stones, 5 percent cobbles and 10 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

B2—7 to 19 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, and slightly plastic; common very fine and fine roots; many very fine and fine pores; 5 percent cobbles and 15 percent gravel; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C1ca—19 to 28 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; many very fine pores; 40 percent gravel and 10 percent cobbles; strongly calcareous, carbonates disseminated in coatings on rock fragments; strongly alkaline (pH 8.9); clear smooth boundary.

C2ca—28 to 37 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; common very fine pores; 50 percent gravel and 5 percent cobbles; strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.6); clear wavy boundary.

C3ca—37 to 44 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; single grained; loose; few very fine roots; 50 percent gravel and 10 percent cobbles; strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.6); clear wavy boundary.

C4—44 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; single grained; loose; 55 percent gravel and 15 percent cobbles; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5).

The solum is 7 to 19 inches thick. The control section is 35 to 60 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 10 to 18 percent. It is 15 to 40 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 12 to 18 percent.

The B2 horizon has texture of gravelly sandy loam, very gravelly loam, or very gravelly sandy loam. It has a clay content of 10 to 18 percent. It is 20 to 60 percent rock fragments. Reaction is moderately alkaline or

strongly alkaline. The calcium carbonate equivalent is 19 to 29 percent.

The Cca horizon has texture of very gravelly sandy loam or very gravelly stony loam. It has clay content of 10 to 18 percent. It is 40 to 70 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 20 to 40 percent.

Hillfield series

The Hillfield series consists of very deep, well drained, moderately slowly permeable soils on lake terraces. These soils formed in mixed lake sediment derived dominantly from sedimentary rocks. Slope is 2 to 5 percent. Elevation is 5,000 to 5,200 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are coarse-silty, mixed, mesic Calcixerollic Xerochrepts.

Typical pedon of Hillfield silt loam, 2 to 5 percent slopes, about 6 miles west of Lehi, about 2,500 feet north and 200 feet west of the southeast corner of sec. 13, T. 5 S., R. 1 W.

Ap—0 to 5 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure that parts to weak medium subangular blocky; hard, friable, sticky and plastic; few very fine roots; few very fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary.

A12—5 to 11 inches; light brownish gray (2.5Y 6/2) very fine sandy loam, olive brown (2.5Y 4/4) moist; weak medium platy structure that parts to weak medium subangular blocky; hard, friable, sticky and plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C1ca—11 to 18 inches; light brownish gray (2.5Y 6/2) very fine sandy loam, olive brown (2.5Y 4/4) moist; weak medium subangular blocky; hard, friable, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, carbonates disseminated and in masses; strongly alkaline (pH 8.9); gradual smooth boundary.

C3ca—18 to 30 inches; light brownish gray (2.5Y 6/2) very fine sandy loam that has fine strata of sandy loam, olive brown (2.5Y 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine pores; strongly calcareous, carbonates disseminated and in masses; strongly alkaline (pH 9.0); clear smooth boundary.

C3—30 to 42 inches; light brownish gray (2.5Y 6/2) silt loam finely stratified with very fine sandy loam, dark grayish brown (2.5Y 4/3) moist; many medium distinct dark brown (10YR 4/3) mottles; weak medium platy structure; hard, friable, slightly sticky and slightly plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C4—42 to 60 inches; light brownish gray (2.5Y 6/2) very fine sandy loam, dark grayish brown (2.5Y 4/2) moist; many medium distinct dark brown (10YR 4/3) mottles; weak medium platy structure; soft, friable, slightly sticky and slightly plastic; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.4).

The solum is 8 to 11 inches thick. It has a clay content of 10 to 18 percent. Bedrock is at a depth of 60 inches or more.

Hupp series

The Hupp series consists of very deep, well drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from quartzite, limestone, and sandstone. Slope is 4 to 15 percent. Elevation is 5,000 to 5,500 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Calcic Haploxerolls.

Typical pedon of Hupp gravelly loam, 4 to 8 percent slopes, about 9 miles west of Lehi, about 200 feet west and 100 feet south of the northeast corner of sec. 12, T. 5 S., R. 2 W.

A11—0 to 4 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure that parts to moderate fine granular; soft, friable, slightly sticky and slightly plastic; common very fine roots; common fine pores; 20 percent gravel; neutral (pH 6.6); abrupt smooth boundary.

A12—4 to 14 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; few medium, fine, and very fine roots; few fine and medium pores; 20 percent cobbles and 5 percent gravel; neutral (pH 6.8); clear smooth boundary.

B2—14 to 21 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, friable, sticky and plastic; few medium, fine, and very fine roots; common fine pores; 30 percent gravel and 5 percent cobbles; slightly calcareous, carbonates in coatings on the undersides of rock fragments; moderately alkaline (pH 7.9); clear smooth boundary.

C1ca—21 to 28 inches; pale brown (10YR 6/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; soft, friable, sticky and plastic; few fine and very fine roots; few fine and medium pores; 50 percent gravel, 10 percent cobbles; moderately calcareous, carbonates disseminated in veins and in coatings on rock fragments; strongly alkaline (pH 8.6); clear smooth boundary.

C2ca—28 to 41 inches; pale brown (10YR 6/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few fine pores; 50 percent gravel and 10 percent cobbles; moderately calcareous, carbonates disseminated in masses and in coatings on rock fragments; strongly alkaline (pH 8.6); gradual smooth boundary.

C3—41 to 60 inches; yellowish brown (10YR 5/4) very cobbly loam, brown (10YR 4/3) moist; massive; soft, friable, sticky and plastic; few fine and medium pores; 35 percent cobbles, and 10 percent gravel; moderately calcareous, carbonates disseminated in veins and in coatings on rock fragments; moderately alkaline (pH 8.4).

The solum is 13 to 24 inches thick. The mollic epipedon is 12 to 20 inches thick. The control section is 35 to 60 percent rock fragments. The profile is 18 to 27 percent clay. Bedrock is at a depth of 60 inches or more.

The A1 horizon is 15 to 35 percent rock fragments. Reaction is neutral or mildly alkaline.

The B2 horizon is 35 to 60 percent rock fragments. Reaction is neutral to strongly alkaline.

The C horizon has texture of very gravelly loam or very cobbly loam. It is 35 to 60 percent rock fragments. Reaction is moderately alkaline or strongly alkaline.

Jericho series

The Jericho series consists of shallow, well drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from igneous rocks. Slope is 4 to 15 percent. Elevation is 4,600 to 5,800 feet. Average annual precipitaiton is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic, shallow Xerollic Durorthids.

Typical pedon of Jericho gravelly fine sandy loam, 4 to 15 percent slopes, about 6 miles north of Jericho, about 2,300 feet east and 1,800 feet south of the northwest corner of sec. 9, T. 12 S., R. 3 W.

A1—0 to 5 inches; pale brown (10YR 6/3) gravelly fine sandy loam, dark brown (10YR 4/3) moist; weak thin platy structure that parts to weak fine granular; soft, very friable; common very fine and fine roots; many very fine pores; 20 percent gravel, 10 percent cobbles, and 1 percent stones; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

B2—5 to 9 inches; light yellowish brown (10YR 6/4) gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine pores; 20 percent gravel, 10 percent cobbles, and 1 percent stones; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

C1ca—9 to 13 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine pores; 30 percent gravel, 15 percent cobbles, and 2 percent stones; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear wavy boundary.

C2sica—13 to 19 inches; very pale brown (10YR 8/3) very gravelly fine sandy loam, pale brown (10YR 6/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many fine pores; 40 percent gravel, 15 percent cobbles, and 2 percent stones; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt wavy boundary.

C3sicam—19 to 30 inches; silica and carbonate cemented hardpan that has a troweled surface.

IIC4—30 to 42 inches; very pale brown (10YR 8/4) very gravelly loamy sand, very pale brown (10YR 7/4) moist; single grained; loose; 45 percent gravel; neutral (pH 7.2); abrupt wavy boundary.

IIC5sin—42 to 60 inches; silica and carbonate cemented hardpan layer.

The solum is 7 to 10 inches thick. The duripan is at a depth of 10 to 20 inches. The control section is 35 to 60 percent rock fragments.

The A1 horizon has a clay content of 10 to 18 percent. It is 20 to 35 percent rock fragments, and the calcium carbonate equivalent is 2 to 20 percent.

The B2 horizon has a clay content of 10 to 18 percent. It is 20 to 35 percent rock fragments. The calcium carbonate equivalent is 2 to 20 percent.

The Cca horizon is very gravelly fine sandy loam or very gravelly coarse sandy loam. It has a clay content of 10 to 18 percent and is 35 to 60 percent rock fragments. Reaction is moderately or strongly alkaline.

Juab series

The Juab series consists of very deep, well drained, moderately permeable soils on alluvial fans and lake terraces. These soils formed in mixed alluvium and lake sediment derived dominantly from sedimentary and igneous rocks. Slope is 0 to 8 percent. Elevation is 4,550 to 6,000 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed, mesic Torrifluventic Haploxerolls.

Typical pedon of Juab loam, 2 to 4 percent slopes, about 3 miles south of Cedar Fort, about 2,500 feet west and 100 feet south of the northeast corner of sec. 19, T. 6 S., R. 2 W.

A11—0 to 4 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine pores; moderately calcareous; moderately alkaline (pH 8.4); abrupt smooth boundary.

A12—4 to 8 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, friable, sticky and plastic; few medium, fine, and very fine roots; few medium pores; moderately calcareous; strongly alkaline (pH 8.6); clear smooth boundary.

A13—8 to 13 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, friable, sticky and plastic; few medium, fine, and very fine roots; common fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C1—13 to 21 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; few fine and very fine pores; strongly calcareous; strongly alkaline (pH 8.8); gradual smooth boundary.

C2—21 to 29 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; few fine and very fine pores; strongly calcareous; strongly alkaline (pH 8.8); gradual smooth boundary.

C3—29 to 38 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and few very fine roots; few fine and very fine pores; 3 percent gravel; strongly calcareous; strongly alkaline (pH 8.8); gradual smooth boundary.

C4—38 to 60 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; common very fine discontinuous pores; strongly calcareous; strongly alkaline (pH 8.8).

The mollic epipedon is 8 to 19 inches thick. The profile is 0 to 15 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 15 to 27 percent. Reaction is mildly alkaline to strongly alkaline.

The C1 and C2 horizons have texture of loam, silt loam, or silty clay loam. They have a clay content of 18 to 30 percent. Reaction is mildly alkaline to strongly alkaline.

The C3 and C4 horizons have texture of very gravelly fine sandy loam, gravelly loam, loam, silt loam, or silty clay loam. They have a clay content of 10 to 30 percent. Reaction is mildly alkaline to strongly alkaline.

Justesen series

The Justesen series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from igneous rocks. Slope is 4 to 15 percent. Elevation is 5,600 to 6,600 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are fine-loamy, mixed, frigid Calcic Argixerolls.

Typical pedon of Justesen loam, 4 to 15 percent slopes, about 5 miles south of Eureka, about 2,400 feet north and 1,200 feet east of the southwest corner of sec. 7, T. 11 S., R. 2 W.

A11—0 to 7 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; few very fine pores; neutral (pH 7.2); clear smooth boundary.

A12—7 to 14 inches; dark brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; common very fine pores; neutral (pH 7.0); clear smooth boundary.

B21t—14 to 21 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; common very fine roots; common very fine and few fine pores; few thin clay films; neutral (pH 6.8); clear smooth boundary.

B22t—21 to 25 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, firm, very sticky and very plastic; common very fine roots; common very fine pores; few thin clay films; moderately calcareous, carbonates disseminated and in fine veins and filaments; moderately alkaline (pH 8.2); clear smooth boundary.

B31ca—25 to 30 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; few very fine pores; moderately calcareous, carbonates in veins and filaments and in coatings on ped faces; moderately alkaline (pH 8.2); clear smooth boundary.

B32ca—30 to 34 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; few very fine pores; moderately calcareous; carbonates are in filaments and fine veins; moderately alkaline (pH 8.4); clear smooth boundary.

C1—34 to 42 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, firm, sticky and plastic; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.2); gradual smooth boundary.

C2—42 to 51 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, firm, sticky and plastic; slightly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

IIC3ca—51 to 60 inches; white (10YR 8/2) loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0).

The solum is 27 to 44 inches thick. The mollic epipedon is 14 to 17 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 10 to 27 percent.

The B2t horizon has texture of silty clay loam or clay loam. It has a clay content of 27 to 35 percent. Reaction is neutral to moderately alkaline.

The C1 horizon has texture of silty clay loam, clay loam, or stony loam. It has a clay content of 18 to 35 percent. It is 0 to 30 percent rock fragments.

The C2 horizon has texture of loam, stony loam, or silty clay loam. It has a clay content of 18 to 35 percent. It is 0 to 35 percent rock fragments. The calcium carbonate equivalent is 40 to 70 percent.

Keigley series

The Keigley series consists of very deep, well drained, moderately slowly permeable soils on lake terraces and alluvial fans. These soils formed in mixed alluvium and lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 2 percent. Elevation is 4,600 to 5,300 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Cumulic Haploxerolls.

Typical pedon of Keigley silt loam, dry, 0 to 2 percent slopes, about 1.5 miles east of Cedar Fort, about 2,400 feet east and 900 feet north of the southwest corner of sec. 4, T. 6 S., R. 2 W.

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure that parts to moderate fine granular; slightly hard, friable, sticky and plastic; few very fine, fine, and medium roots; few fine and common very fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

A12—8 to 13 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few medium, fine, and very fine roots; few fine and very fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

A13—13 to 24 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, sticky and plastic; few fine and very fine roots; few fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); gradual smooth boundary.

C1—24 to 40 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; massive; soft, friable, sticky and plastic; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.1); gradual smooth boundary.

C2—40 to 60 inches; pale brown (10YR 6/3) light silty clay loam, brown (10YR 4/3) moist; massive; soft, friable, sticky and plastic; 10 percent gravel and cobbles below a depth of 45 inches; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4).

The mollic epipedon is 21 to 25 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent.

The C horizon has a clay content of 27 to 35 percent.

Kirkham series

The Kirkham series consists of very deep, somewhat poorly drained, moderately slowly permeable soils on alluvial plains and valley bottoms. These soils formed in alluvium and lake sediment derived dominantly from mixed sedimentary rocks. Slope is 0 to 2 percent. Elevation is 4,500 to 5,100 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Fluvaquentic Haplustolls.

Typical pedon of Kirkham silt loam, about 2.5 miles west and 0.5 mile north of Nephi, about 1,800 feet west and 1,300 feet south of the northeast corner of sec. 1, T. 13 S., R. 1 W.

Ap1—0 to 3 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; strong fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and common very fine roots; few fine pores; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

Ap2—3 to 8 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; strong medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); clear smooth boundary.

A13—8 to 13 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common very fine pores; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C1—13 to 20 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; few fine distinct strong brown (7.5YR 4/6) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); clear smooth boundary.

C2—20 to 31 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 3/3) moist; few fine distinct dark grayish brown (2.5Y 4/2) and strong brown (7.5YR 4/6) mottles; massive; hard, firm, sticky and plastic; few very fine roots; few fine and common very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); abrupt smooth boundary.

C3—31 to 36 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; few fine distinct strong brown (7.5YR 4/6) mottles; massive; hard, firm, sticky and slightly plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); abrupt smooth boundary.

C4—36 to 40 inches; pale brown (10YR 6/3) heavy silty clay loam, brown (10YR 4/3) moist; common fine distinct strong brown (7.5YR 4/6) mottles; massive; very hard, firm, sticky and plastic; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

C5—40 to 48 inches; brown (10YR 5/3) silty clay, very dark grayish brown (10YR 3/2) moist; massive; extremely hard, very firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

C6—48 to 56 inches; pale brown (10YR 6/3) silty clay, dark brown (10YR 3/3) moist; massive; extremely hard, very firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary.

C7—56 to 60 inches; gray (10YR 6/1) silty clay, dark grayish brown (10YR 4/2) moist; few fine distinct yellowish brown (10YR 5/6) mottles; massive; extremely hard, very firm, very sticky and very plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The mollic epipedon is 13 to 16 inches thick. A water table is at a depth of 2.5 to 4.5 feet year round. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 15 to 27 percent. Reaction is moderately or strongly alkaline. The calcium carbonate equivalent is 10 to 28 percent.

The C horizon has texture of silt loam, silty clay loam, or clay loam to a depth of 40 inches. It is silty clay or silty clay loam below a depth of 40 inches. Clay content is 20 to 35 percent above a depth of 40 inches and 35 to 50 percent below a depth of 40 inches. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 20 to 40 percent.

Kitchell series

The Kitchell series consists of very deep, well drained, moderately rapidly permeable soils on mountainsides. These soils formed in colluvium derived dominantly from limestone, shale, and sandstone. Slope is 30 to 70 percent. Elevation is 6,000 to 7,500 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 36 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, Calcic Pachic Cryoborolls.

Typical pedon of a Kitchell cobbly loam in an area of Kitchell-Rock outcrop complex, 30 to 70 percent slopes, about 8 miles southwest of Lehi, about 3,200 feet east and 1,500 feet south of the northwest corner of sec. 26, T. 6 S., R. 1 W.

A11—0 to 3 inches; very dark grayish brown (10YR 3/2) cobbly loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; soft, friable, slightly sticky and plastic; few very fine roots; few very fine pores; 2 percent of the surface covered with stones, 20 percent cobbles and 10 percent gravel in soil matrix; mildly alkaline (pH 7.8); abrupt smooth boundary.

A12—3 to 10 inches; very dark grayish brown (10YR 3/2) cobbly loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and plastic; common very fine, few fine and medium roots; few very fine pores; 20 percent cobbles and 10 percent gravel; mildly alkaline (pH 7.6); clear smooth boundary.

A13—10 to 23 inches; very dark grayish brown (10YR 3/2) very stony loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots; few very fine pores; 30 percent gravel and 30 percent stones; strongly calcareous; carbonates are in thin coatings on undersides of rock fragments; mildly alkaline (pH 7.8); gradual wavy boundary.

C1ca—23 to 35 inches; brown (10YR 4/3) extremely stony loam, dark brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and plastic; few fine and very fine roots; few very fine pores; 35 percent gravel and 35 percent stones; strongly calcareous, carbonates are disseminated and in thick soft powdery coatings on rock fragments; strongly alkaline (pH 8.4); gradual wavy boundary.

C2ca—35 to 60 inches; brown (10YR 5/3) extremely stony loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky and plastic; few fine roots; 40 percent gravel and 40 percent stones; very strongly calcareous, carbonates disseminated and in thick soft powdery coatings on rock fragments; moderately alkaline (pH 8.4).

The solum is 20 to 23 inches thick. The mollic epipedon is 20 to 23 inches thick. The control section is 50 to 80 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 10 to 27 percent. It is 30 to 60 percent rock fragments. Reaction is mildly alkaline or moderately alkaline.

The Cca horizon has texture of very cobbly loam, very stony loam, very cobbly clay loam, extremely cobbly loam, or extremely cobbly clay loam. It has a clay content of 18 to 35 percent. It is 40 to 60 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 40 to 60 percent.

Linoyer series

The Linoyer series consists of very deep, well drained, moderately permeable soils on alluvial fans and lake terraces. These soils formed in mixed alluvium and lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 10 percent. Elevation is 4,500 to 5,300 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are coarse-silty, mixed (calcareous), mesic Xeric Torrifluvents.

Typical pedon of Linoyer very fine sandy loam, 2 to 5 percent slopes, about 5 miles south of Fairfield, about 2,000 feet west and 200 feet south of the northeast corner of sec. 19, T. 7 S., R. 2 W.

A11—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, dark grayish brown (10YR 4/3) moist; weak thin platy structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine vesicular pores; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

A12—2 to 5 inches; pale brown (10YR 6.3) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); abrupt smooth boundary.

C1—5 to 18 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

C2—18 to 35 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

C3—35 to 60 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; soft, friable, slightly plastic; few very fine roots; few fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.7).

The solum is 2 to 14 inches thick. The profile is moderately alkaline or strongly alkaline. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 10 to 18 percent.

The C horizon has texture of very fine sandy loam or silt loam. It has a clay content of 10 to 18 percent.

Lizzant series

The Lizzant series consists of very deep, well drained, moderately permeable soils on mountainsides, hillsides, and alluvial fans. These soils formed in alluvium and colluvium derived dominantly from limestone. Slope is 8 to 60 percent. Elevation is 5,500 to 7,000 feet. Average annual precipitation is 14 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, frigid Typic Calcixerolls.

Typical pedon of Lizzant very cobbly loam, 30 to 60 percent slopes, about 1.5 miles north and 2 miles east of Nephi, about 1,600 feet east and 100 feet south of the northwest corner of sec. 35, T. 12 S., R. 1 E.

A1—0 to 9 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine pores; 5 percent stones, 20 percent cobbles, and 25 percent gravel; strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.4); clear smooth boundary.

B2—9 to 14 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine pores; 5 percent stones, 25 percent cobbles, and 30 percent gravel; strongly calcareous, carbonates disseminated and in coatings on lower side of rock fragments; moderately alkaline (pH 7.9); clear smooth boundary.

C1ca—14 to 20 inches; white (10YR 8/2) very cobbly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine pores; 5 percent stones, 25 percent cobbles, and 30 percent gravel; very strongly calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.2); gradual wavy boundary.

C2ca—20 to 33 inches; very pale brown (10YR 8/2) very cobbly loam, light yellowish brown (10YR 6/4) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine pores; 5 percent stones, 15 percent cobbles, and 20 percent gravel; very strongly calcareous; carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.2); clear smooth boundary.

C3ca—33 to 47 inches; very pale brown (10YR 8/3) very cobbly loam, light yellowish brown (10YR 6/4) moist; massive, hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine pores; 5 percent stones, 25 percent cobbles, and 30 percent gravel; very strongly calcareous, carbonates disseminated and weakly cemented; moderately alkaline (pH 8.2); gradual irregular boundary.

C4—47 to 60 inches; very pale brown (10YR 8/3) extremely cobbly loam, light yellowish brown (10YR 6/4) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; many very fine pores; 5 percent stones, 30 percent cobbles, and 40 percent gravel; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 14 to 15 inches thick. The mollic epipedon is 9 to 15 inches thick. The profile is 18 to 27 percent clay. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a sodium absorption ratio of 40 to 60. Reaction is neutral or mildly alkaline. The calcium carbonate equivalent is 15 to 25 percent.

The B and C horizons have texture of very cobbly loam or extremely cobbly loam. They are 40 to 70 percent rock fragments. Reaction is moderately alkaline to strongly alkaline. The calcium carbonate equivalent is 40 to 55 percent.

Lodar series

The Lodar series consists of shallow, somewhat excessively drained, moderately permeable soils on hillsides. These soils formed in colluvium and residuum derived dominantly from limestone. Slope is 3 to 70 percent. Elevation is 4,800 to 6,400 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Lithic Calcixerolls.

Typical pedon of a Lodar very cobbly loam in an area of Lodar-Rock outcrop complex, 30 to 70 percent slopes, about 10 miles east of Fairfield, about 1,600 feet south and 500 feet east of the northwest corner of sec. 25, T. 6 S., R. 1 W.

A11—0 to 4 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, friable, sticky and plastic; few very fine roots; few fine and very fine pores; 5 percent stones, 20 percent cobbles, and 15 percent gravel; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

A12—4 to 10 inches; brown (10YR 5/3) very stony loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure that parts to moderate fine granular; soft, friable, sticky and plastic; common fine and few medium and very fine roots; few fine and medium pores; 30 percent gravel and 20 percent flagstones; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

Cca—10 to 15 inches; pale brown (10YR 6/3) very stony loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, firm, sticky and plastic; few fine and very fine roots; few fine and very fine pores; 40 percent flagstones and 20 percent gravel; very strongly calcareous, carbonates disseminated and in thick coatings on rock fragments; strongly alkaline (pH 8.6); abrupt smooth boundary.

R—15 inches; limestone.

The solum is 7 to 12 inches thick. The mollic epipedon is 7 to 12 inches thick. The control section is 35 to 60 inches thick. The profile is 18 to 27 percent clay and is moderately alkaline or strongly alkaline. Bedrock is at a depth of 10 to 20 inches.

The A1 horizon is 35 to 60 percent rock fragments. The calcium carbonate equivalent is 3 to 15 percent.

The Cca horizon has texture of very cobbly loam, very gravelly loam, or extremely gravelly loam. It is 35 to 80 percent rock fragments. The calcium carbonate equivalent is 40 to 60 percent.

Lundy series

The Lundy series consists of shallow, somewhat excessively drained, moderately permeable soils on mountainsides and hillsides. These soils formed in colluvium and residuum derived dominantly from limestone. Slope is 30 to 70 percent. Elevation is 5,600 to 8,100 feet. Average annual precipitation is 14 to 18 inches, and mean annual air temperature is 41 to 45 degrees.

These soils are loamy-skeletal, carbonatic, frigid Lithic Calcixerolls.

Typical pedon of a Lundy very cobbly loam in an area of Lundy-Rock outcrop complex, 30 to 70 percent slopes, about 9 miles east of Fairfield, about 1,600 feet east and 2,200 feet south of the northwest corner of sec. 26, T. 6 S., R. 1 W.

A11—0 to 2 inches; dark brown (10YR 3/3) very cobbly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, friable, slightly sticky and plastic; common very fine roots; few fine and very fine pores; 10 percent gravel, 15 percent cobbles, and 15 percent stones; slightly calcareous, carbonates disseminated and in fine particles; mildly alkaline (pH 7.6); abrupt smooth boundary.

A12—2 to 6 inches; dark brown (10YR 3/3) very cobbly loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few coarse, medium, and fine roots; few fine and very fine pores; 30 percent gravel and 20 percent cobbles; moderately calcareous, carbonates in fine particles and in coatings on undersides of rock fragments; mildly alkaline (pH 7.6); clear smooth boundary.

C1ca—6 to 9 inches; brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few coarse, medium, and fine roots; few very fine pores; 30 percent gravel and 20 percent cobbles; strongly calcareous, carbonates disseminated in coatings on rock fragments, and in fine particles; strongly alkaline (pH 8.6); clear smooth boundary.

C2ca—9 to 19 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and plastic; few coarse and medium roots; 35 percent gravel and 20 percent flagstones; very strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.8); abrupt wavy boundary.

R—19 inches; fractured limestone.

The solum is 6 to 10 inches thick. The mollic epipedon is 7 to 10 inches thick. The control section is 35 to 80 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

The A1 horizon has a clay content of 18 to 27 percent. It is 40 to 60 percent rock fragments. Reaction is mildly alkaline or moderately alkaline.

The Cca horizon has a clay content of 10 to 27 percent. It is 35 to 70 percent rock fragments.

Manassa series

The Manassa series consists of very deep, well drained, slowly permeable soils on alluvial fans and lake terraces. These soils formed in mixed alluvium and lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 5 percent. Elevation is 4,500 to 5,200 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed (calcareous), mesic Xeric Torriorthents.

Typical pedon of Manassa silt loam, 0 to 2 percent slopes, about 1 mile south of Mills, about 400 feet east and 1,200 feet north of the southwest corner of sec. 36, T. 15 S., R. 2 W.

Ap—0 to 8 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, firm, sticky and slightly plastic; common very fine roots; few fine pores; strongly saline; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

A12—8 to 15 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure that parts to moderate fine granular; slightly hard, firm, sticky and plastic; common very fine roots; few fine pores; strongly saline; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C1—15 to 25 inches; very pale brown (10YR 7/3) silty clay loam, brown (10YR 5/3) moist; massive; slightly hard, firm, sticky and plastic; few very fine roots; common very fine pores; strongly saline; strongly calcareous, carbonates disseminated and in masses; moderately alkaline (pH 8.4); clear smooth boundary.

C2ca—25 to 40 inches; very pale brown (10YR 7/3) silty clay loam, brown (10YR 5/3) moist; massive; slightly hard, firm, sticky and plastic; strongly saline; moderately calcareous, carbonates disseminated and in masses; strongly alkaline (pH 8.6); clear smooth boundary.

C3—40 to 60 inches; very pale brown (10YR 7/3) silty clay loam, brown (10YR 5/3) moist; massive; slightly hard, firm, sticky and plastic; strongly saline; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4).

The solum is 9 to 15 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. Reaction is moderately alkaline to very strongly alkaline. The calcium carbonate content is 9 to 15 percent. Electrical conductivity of the saturation extract is 8 to 16 millimhos.

The C horizon has texture of silt loam or silty clay loam. It has a clay content of 18 to 35 percent. Reaction is moderately alkaline to very strongly alkaline. The calcium carbonate equivalent is 15 to 20 percent. Electrical conductivity of the saturation extract is 16 to 40 millimhos.

Manila series

The Manila series consists of very deep, well drained, slowly permeable soils on alluvial fans. These soils formed in mixed alluvium derived dominantly from sedimentary rocks. Slope is 4 to 15 percent. Elevation is 5,800 to 7,000 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are fine, montmorillonitic, frigid Typic Argixerolls.

Typical pedon of Manila loam, 4 to 8 percent slopes, about 5 miles south and 1.5 miles east of Nephi, about 2,500 feet north and 1,000 feet east of the southwest corner of sec. 34, T. 13 S., R. 1 E.

Ap—0 to 7 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine pores; 5 percent rock fragments; neutral (pH 7.2); abrupt smooth boundary.

B1—7 to 12 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine and medium roots; many very fine and fine pores; few thin clay films; 5 percent rock fragments; mildly alkaline (pH 7.4); clear smooth boundary.

B21t—12 to 16 inches; reddish yellow (7.5YR 6/6) clay loam, brown (7.5YR 4/4) moist; strong fine angular blocky structure; very hard, firm, very sticky and very plastic; common fine and medium roots; many very fine pores; moderately thick continuous clay films; 5 percent rock fragments; mildly alkaline (pH 7.6); clear smooth boundary.

B22t—16 to 26 inches; reddish yellow (7.5YR 6/6) clay, reddish brown (5YR 4/4) moist; moderate medium prismatic structure that parts to strong medium angular blocky; very hard, very firm, very sticky and very plastic; few fine and medium roots; many very fine pores; moderately thick continuous clay films; 5 percent rock fragments; mildly alkaline (pH 7.6); gradual wavy boundary.

B23t—26 to 36 inches; reddish yellow (7.5YR 6/6) clay loam, strong brown (7.5YR 4/6) moist; moderate medium prismatic structure that parts to strong medium angular blocky; very hard, firm, very sticky and very plastic; few fine and medium roots; many very fine pores; moderately thick continuous clay films; 5 percent rock fragments; mildly alkaline (pH 7.8); clear wavy boundary.

B24t—36 to 43 inches; reddish yellow (7.5YR 6/7) clay loam, yellowish red (5YR 4/6) moist; moderate medium prismatic structure that parts to strong medium angular blocky; very hard, firm, very sticky and very plastic; few fine and medium roots; many very fine pores; moderately thick continuous clay films; 5 percent rock fragments; mildly alkaline (pH 7.8); abrupt wavy boundary.

C1ca—43 to 51 inches; pink (7.5YR 8/4) gravelly loam, strong brown (7.5YR 5/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; many very fine pores; 15 percent gravel; strongly calcareous, carbonates continuous and weakly cemented in places; moderately alkaline (pH 8.2); gradual wavy boundary.

C2ca—51 to 60 inches; reddish yellow (7.5YR 7/6) gravelly loam, yellowish red (5YR 5/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine pores; 15 percent gravel; strongly calcareous, continuous carbonates; moderately alkaline (pH 8.4).

The solum is 41 to 52 inches thick. The mollic epipedon is 10 to 12 inches thick. The control section is 0 to 15 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 20 to 27 percent. It is 0 to 10 percent rock fragments.

The B2t horizon has texture of clay loam, silty clay, or clay. It has a clay content of 35 to 45 percent. It is 0 to 15 percent rock fragments. Reaction is neutral or mildly alkaline.

The Cca horizon has texture of gravelly loam or gravelly clay loam. It has a clay content of 20 to 35 percent. It is 15 to 35 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 40 percent.

Medburn series

The Medburn series consists of very deep, well drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from mixed igneous and sandstone rocks. Slope is 0 to 4 percent. Elevation is 4,500 to 5,300 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are coarse-loamy, mixed (calcareous), mesic Xeric Torrifluvents.

Typical pedon of Medburn fine sandy loam, 0 to 2 percent slopes, about 1.5 miles southwest of Elberta, about 1,100 feet west and 1,800 feet south of the northeast corner of sec. 19, T. 10 S., R. 1 W.

A11—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; 10 percent gravel; slightly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

A12—4 to 8 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; common very fine pores; 5 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C1—8 to 15 inches; light yellowish brown (10YR 6/4) fine sandy loam, brown (10YR 5/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky; common very fine roots; common very fine pores; 5 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C2—15 to 24 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine roots; few fine pores; 5 percent gravel; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C3—24 to 32 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; few fine pores; 5 percent gravel; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C4—32 to 41 inches; very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; 20 percent gravel; moderately calcareous; disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C5—41 to 60 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 3 to 11 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 5 to 15 percent. Reaction is moderately alkaline or strongly alkaline.

The C horizon has texture of fine sandy loam or gravelly sandy loam. It has a clay content of 5 to 15 percent. It is 0 to 20 percent rock fragments. Reaction is moderately alkaline or strongly alkaline.

Mellor series

The Mellor series consists of very deep, well drained, slowly permeable soils on alluvial fans, flood plains, and lake terraces. These soils formed in alluvium and lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 2 percent. Elevation is 4,500 to 5,000 feet.

Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Xerollic Natrargids.

Typical pedon of a Mellor silt loam about 1 mile north of Fairfield, about 30 feet north and 2,600 feet west of the southeast corner of sec. 20, T. 6 S., R. 2 W.

A11—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, friable, sticky and plastic; very few roots; common very fine vesicular pores; slightly saline; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

A12—3 to 7 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; soft, friable, sticky and plastic; few fine and common very fine roots; few fine pores; moderately saline; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

B2t—7 to 15 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; weak medium prismatic structure that parts to moderate medium subangular blocky; hard, firm, sticky and plastic, few fine, very fine, and medium roots; few very fine pores; strongly saline; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

B3tca—15 to 20 inches; light gray (10YR 7/2) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine pores; strongly saline; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.2); gradual smooth boundary.

C1—20 to 30 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; strongly saline; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

C2—30 to 40 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; strongly saline; moderately calcareous, disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

C3—40 to 60 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; strongly saline; moderately calcareous, disseminated carbonates; strongly alkaline (pH 9.0).

The solum is 15 to 28 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 20 to 27 percent. The calcium carbonate equivalent is 10 to 27 percent.

The B2t horizon has a clay content of 27 to 35 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 14 to 30 percent.

The C horizon has texture of silty clay loam or silt loam. It has a clay content of 10 to 30 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent is 11 to 30 percent.

Modoc series

The Modoc series consists of moderately deep, well drained, moderately slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from igneous rocks. Slope is 4 to 8 percent. Elevation is 5,000 to 5,400 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed, mesic Aridic Durixerolls.

Typical pedon of Modoc fine sandy loam, cool, 4 to 8 percent slopes, about 3 miles north and 3 miles west of Nephi, about 2,450 feet north and 1,350 feet west of the southeast corner of sec. 23, T. 12 S., R. 1 W.

A11—0 to 2 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure; soft, friable, nonsticky and nonplastic; few very fine roots; neutral (pH 7.3); abrupt smooth boundary.

A12—2 to 4 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; few fine pores; neutral (pH 6.6); abrupt smooth boundary.

B1—4 to 8 inches; brown (10YR 5/3) light clay loam, dark brown (10YR 3/3) moist; moderate medium platy structure that parts to strong thin platy; slightly hard, friable, sticky and plastic; few fine, medium, and coarse roots; few fine pores; neutral (pH 7.1); clear smooth boundary.

B2t—8 to 16 inches; brown (10YR 5/3) light clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine, and medium roots; common fine pores; neutral (pH 7.3); clear smooth boundary.

C1si—16 to 30 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; very hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine and medium pores; 30 percent durinodes; moderately calcareous, carbonates in veins in the lower part of the horizon; mildly alkaline (pH 7.8); gradual wavy boundary.

C2sica—30 to 39 inches; very pale brown (10YR 7/3) fine sandy loam, pale brown (10YR 6/3) moist; massive; very hard, friable, slightly sticky; few very fine roots; few very fine pores; 50 percent durinodes; strongly calcareous, carbonates in masses; strongly alkaline (pH 8.5); abrupt smooth boundary.

C3sicam—39 to 45 inches; very pale brown (10YR 7/3) massive; strongly cemented duripan that has a trowelled surface and 1- to 3-cm thick laminer bands in the upper part; roots horizontal on top of this horizon; few very fine tubular pores; strongly calcareous, carbonates in masses; strongly alkaline (pH 8.5) in seams; gradual smooth boundary.

C4si—45 to 60 inches; very pale brown (10YR 7/3) fine sandy loam; light brownish gray (10YR 6/2) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine and medium pores; 25 to 30 percent durinodes; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 16 to 20 inches thick. The mollic epipedon is 8 to 18 inches thick. The duripan is at a depth of 20 to 40 inches. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 10 to 18 percent. Reaction is neutral to moderately alkaline.

The B2t horizon has a clay content of 27 to 35 percent. Reaction is neutral to moderately alkaline.

The Csi horizon has a clay content of 10 to 18 percent.

Moroni series

The Moroni series consists of very deep, well drained, slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from shale. Slope is 0 to 2 percent. Elevation is 4,850 to 5,450 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine, montmorillonitic, mesic Entic Chromoxererts.

Typical pedon of Moroni silty clay loam, about 1.5 miles north of Levan, about 1,000 feet west and 2,400 feet south of the northeast corner of sec. 19, T. 14 S., R. 1 E.

Ap1—0 to 1 inch; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; moderately thick platy structure; slightly hard, firm, sticky and plastic; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

Ap2—1 inch to 5 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; strong very fine granular structure; loose, firm, sticky and plastic; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

Ap3—5 to 7 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; strong very fine granular structure; hard, firm, sticky and plastic; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

C1—7 to 15 inches; light brownish gray (2.5Y 6/2) light silty clay, dark grayish brown (2.5Y 4/2) moist; weak medium prismatic structure that parts to moderate medium and coarse subangular blocky; very hard, firm, very sticky and plastic; common very fine roots; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C2—15 to 19 inches; light brownish gray (2.5Y 6/2) silty clay, dark grayish brown (2.5Y 4/2) moist; moderate coarse prismatic structure that parts to strong medium prismatic; common very fine roots on faces of peds; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); clear smooth boundary.

C3—19 to 30 inches; light brownish gray (2.5Y 6/2) silty clay, grayish brown (2.5Y 5/2) moist; moderate coarse prismatic structure that parts to strong medium prismatic; very hard, very firm, very sticky and very plastic; few very fine roots; strongly calcareous carbonates disseminated and in soft masses; strongly alkaline (pH 8.6); clear smooth boundary.

C4—30 to 39 inches; light gray (2.5Y 7/2) silty clay, light olive brown (2.5Y 5/4) moist; moderate medium prismatic structure that parts to strong coarse angular blocky; very hard, very firm, very sticky and very plastic; few very fine roots; strongly calcareous, carbonates disseminated and in soft masses; strongly alkaline (pH 8.6); gradual smooth boundary.

C5—39 to 50 inches; light gray (2.5Y 7/2) silty clay, light olive brown (2.5Y 5/4) moist; moderate medium prismatic structure that parts to coarse angular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

C6—50 to 60 inches; light gray (2.5Y 7/2) silty clay, light olive brown (2.5Y 5/4) moist; massive; very hard, very firm, very sticky and very plastic; few very fine roots; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 7 to 10 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 27 to 40 percent.

The C horizon has texture of silty clay or heavy silty clay loam. It has a clay content of 35 to 60 percent. Reaction is moderately alkaline to very strongly alkaline.

Mortenson series

The Mortenson series consists of very deep, well drained, slowly permeable soils on mountainsides. These soils formed in colluvium derived from conglomerate. Slope is 40 to 70 percent. Elevation is 7,000 to 9,000 feet. Average annual precipitation is 25 to 35 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are clayey-skeletal, montmorillonitic Typic Paleboralfs.

Typical pedon of Mortenson silt loam, 40 to 70 percent slopes, about 5 miles south and 6 miles east of Nephi, about 700 feet east and 600 feet south of the northwest corner of sec. 4, T. 14 S., R. 2 E.

A21—0 to 4 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, friable, slightly plastic; few fine and common medium roots; few very fine and fine pores; slightly acid (pH 6.1); clear smooth boundary.

A22—4 to 12 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; few fine and common medium roots; common very fine pores; few charcoal bits; 10 percent gravel and cobbles; slightly acid (pH 6.1); gradual smooth boundary.

A23—12 to 26 inches; very pale brown (10YR 7/3) very stony silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly plastic; few very fine and common medium roots and few coarse roots; common very fine pores; 60 percent rock fragments, mainly cobbles and stones; medium acid (pH 6.0); gradual wavy boundary.

A&B—26 to 31 inches; mixed soil material from the A2 and B2t horizons, 60 percent A2 horizon and 40 percent B2t horizon; the A2 part is similar to the A23 horizon; the B2t part is similar to the B21t horizon; gradual wavy boundary.

B21t—31 to 49 inches; pale brown (10YR 6/3) very stony clay, yellowish brown (10YR 5/4) moist; strong medium angular blocky structure; very hard, very firm, very sticky and very plastic; few fine and medium roots; common very fine pores; many moderately thick clay films; 60 percent rock fragments of which 45 percent is cobbles and stones; slightly acid (pH 6.1); gradual smooth boundary.

B22t—49 to 60 inches; pale brown (10YR 6/3) very stony clay, brown (10YR 5/3) moist; strong medium angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine and common very fine pores; many thin clay films; 60 percent rock fragments, 50 percent of which is cobbles and stones; slightly acid (pH 6.1).

The solum is 5 feet thick or more. The control section is 35 to 70 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A21 and A22 horizons have a clay content of 10 to 18 percent. They are 0 to 15 percent rock fragments.

The A23 horizon has texture of very stony silt loam or very stony loam. It has a clay content of 10 to 18 percent. It is 35 to 60 percent rock fragments.

The B2t horizon has texture of very stony clay or very cobbly clay. It has a clay content of 40 to 60 percent. It is 35 to 70 percent rock fragments.

Mountainville series

The Mountainville series consists of very deep, well drained, moderately permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from quartzite, sandstone, and limestone. Slope is 2 to 10 percent. Elevation is 4,900 to 6,000 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Aridic Calcic Argixerolls.

Typical pedon of Mountainville very stony sandy loam, 3 to 10 percent slopes, about 2 miles south of Cedar Fort, about 2,200 feet south and 1,200 feet east of the northwest corner of sec. 18, T. 6 S., R. 2 W.

A11—0 to 4 inches; grayish brown (10YR 5/2) very stony sandy loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure that parts to moderate fine granular; soft, friable, slightly plastic; common very fine and few fine roots; few fine and very fine pores; 20 percent of surface covered with stones; mildly alkaline (pH 7.8); clear smooth boundary.

A12—4 to 10 inches; brown (10YR 5/3) very stony loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine and very fine roots; common fine and few very fine pores; 25 percent stones, 15 percent cobbles, and 10 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.

B21t—10 to 20 inches; brown (10YR 5/3) extremely stony clay loam; dark brown (10YR 4/3) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and few medium roots; common fine and few very fine pores; few thin clay films on peds and in pores; 40 percent stones, 15 percent cobbles, and 10 percent gravel; mildly alkaline (pH 7.8); clear wavy boundary.

B22tca—20 to 29 inches; pale brown (10YR 6/3) extremely stony sandy clay loam, brown (10YR 4/3) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine pores; 30 percent stones, 25 percent cobbles, and 10 percent gravel; moderately calcareous, carbonates in veins and in coatings on peds and rock fragments; moderately alkaline (pH 8.2); gradual smooth boundary.

C1ca—29 to 42 inches; very pale brown (10YR 7/3) extremely cobbly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and plastic; few fine roots; common very fine pores; 40 percent cobbles, 10 percent stones, and 20 percent gravel; moderately calcareous, carbonates are in veins and disseminated in coatings on rock fragments; moderately alkaline (pH 8.4); clear smooth boundary.

C2ca—42 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, friable, slightly sticky and slightly plastic; 60 percent gravel and 20 percent cobbles; strongly calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.4).

The solum is 28 to 43 inches thick. The mollic epipedon is 10 to 15 inches thick. The control section is 35 to 70 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has texture of very stony sandy loam or gravelly loam. It has clay content of 10 to 27 percent. It is 10 to 60 percent rock fragments. Reaction is mildly alkaline or moderately alkaline.

The B2t horizon has texture of very stony clay loam, very stony sandy clay loam, extremely stony sandy clay loam, very gravelly clay loam, or very cobbly clay loam. It has a clay content of 20 to 35 percent. It is 35 to 65 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 0 to 23 percent.

The Cca horizon has texture of very cobbly loam, very gravelly loam, or very gravelly sandy clay loam. Sandy phases have texture of extremely cobbly sandy loam, very cobbly loamy sand, or very gravelly loamy sand. This horizon has a clay content of 10 to 25 percent. It is 35 to 80 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 40 percent.

Mower series

The Mower series consists of moderately deep, well drained, moderately slowly permeable soils on mountainsides. These soils formed in residuum derived from shale and limestone. Slope is 5 to 50 percent. Elevation is 6,500 to 8,000 feet. Average annual precipitation is 16 to 20 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are fine-loamy, carbonatic, frigid Typic Calcixerolls.

Typical pedon of Mower clay loam, 5 to 15 percent slopes, about 7 miles east and 4 miles south of Levan, about 2,200 feet west and 800 feet north of the southeast corner of sec. 21, T. 15 S., R. 2 E.

A11—0 to 2 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, firm, sticky and plastic; few fine roots; few fine pores; about 15 percent of surface mantled with shale fragments; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

A12—2 to 11 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure that parts to moderate fine granular; hard, firm, sticky and plastic; common fine roots; few fine pores; very strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

B2—11 to 19 inches; light brownish gray (10YR 6/2) heavy silty clay loam, grayish brown (10YR 5/2) moist; weak medium prismatic structure that parts to moderate medium subangular blocky; very hard, firm, sticky and plastic; few fine and very fine roots; few fine pores; very strongly calcareous, carbonates disseminated and in few fine veins; strongly alkaline (pH 8.5); clear smooth boundary.

C1ca—19 to 25 inches; white (10YR 8/2) shaly silty clay loam, pale brown (10YR 6/3) moist; massive; very hard, firm, sticky and plastic; few fine and very fine roots; few very fine pores; 25 percent shale fragments; very strongly calcareous, carbonates disseminated and in soft concretions; strongly alkaline (pH 8.6); abrupt smooth boundary.

C2ca—25 to 38 inches; white (10YR 8/2) shaly silty clay loam, pale brown (10YR 6/2) moist; moderate medium platy structure; very hard, firm, sticky and plastic; few fine and very fine roots, matted on top of horizon; 50 percent shale fragments; very strongly calcareous, carbonates disseminated and in coatings on shale fragments; strongly alkaline (pH 8.7); abrupt smooth boundary.
C—38 inches; shale.

The solum is 12 to 22 inches thick. The mollic epipedon is 7 to 12 inches thick. Paralithic contact is at a depth of 20 to 40 inches. Secondary carbonates are at a depth of 12 to 22 inches. The control section is 20 to 35 percent rock fragments. The profile is 27 to 35 percent clay.

The A1 horizon has texture of clay loam or stony clay loam.

The Cca horizon averages 20 to 35 percent rock fragments.

Musinia series

The Musinia series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans and flood plains. These soils formed in mixed alluvium derived dominantly from sedimentary rocks. Slope is 0 to 5 percent. Elevation is 4,800 to 5,200 feet. Average annual precipitation is 10 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Torrifluventic Haploxerolls.

Typical pedon of Musinia silty clay loam, moist, 2 to 5 percent slopes, 6 miles west of Lehi, about 1,400 feet south and 2,400 feet east of the northwest corner of sec. 19, T. 5 S., R. 1 W.

Ap—0 to 7 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, firm, sticky and plastic; few very fine roots; few very fine pores; slightly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.
C1—7 to 14 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few fine and common very fine pores; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.
C2—14 to 23 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine roots; few fine and very fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); gradual smooth boundary.
C3—23 to 34 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.
C4—34 to 47 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; massive; soft, firm, sticky and plastic; moderately calcareous, disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.
C5—47 to 60 inches; pale brown (10YR 6/3) silty clay loam, brown to dark brown (10YR 4/3) moist; massive; soft, firm, sticky and plastic; moderately calcareous; disseminated carbonates; very strongly alkaline (pH 9.6).

The solum is 7 to 15 inches thick. The mollic epipedon is 7 to 15 inches thick. The profile is silty clay loam or silt loam. Clay content is 20 to 35 percent. Bedrock is at a depth of 60 inches or more.

The A horizon is mildly alkaline or moderately alkaline.

Nephi series

The Nephi series consists of very deep, well drained, slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from shale, limestone, and sandstone. Slope is 0 to 4 percent. Elevation is 5,000 to 5,500 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Calcic Argixerolls.

Typical pedon of Nephi silt loam, about 2 miles west and 4 miles south of Nephi, about 1,200 feet south and 10 feet east of the northwest corner of sec. 31, T. 12 S., R. 1 E.

Ap—0 to 9 inches; brown (7.5YR 5/4) silt loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine pores; slightly calcareous, disseminated carbonates; moderately alkaline (pH 8.3); clear smooth boundary.
B21t—9 to 17 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, firm, sticky and plastic; common very fine roots; many very fine and few fine pores; common thin clay films on faces of peds; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.3); clear smooth boundary.

B22t—17 to 23 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 3/4) moist; strong fine subangular blocky structure; very hard, firm, sticky and plastic; common very fine roots; many very fine pores; common moderately thick clay films on faces of peds; moderately calcareous, carbonates disseminated and in few fine masses of secondary lime; moderately alkaline (pH 8.2); clear wavy boundary.

B31t—23 to 31 inches; strong brown (7.5YR 5/6) silty clay loam, reddish brown (5YR 4/4) moist; strong fine subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many very fine pores; common moderately thick clay films on faces of peds; strongly calcareous, carbonates disseminated and in common fine masses of secondary lime; moderately alkaline (pH 8.4); clear wavy boundary.

B32tca—31 to 42 inches; light brown (7.5YR 6/5) silty clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many very fine pores; few thin clay films on faces of peds; strongly calcareous, carbonates disseminated and in common fine masses of secondary lime; moderately alkaline (pH 8.4); clear wavy boundary.

Cca—42 to 60 inches; pink (7.5YR 7/5) silt loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine pores; few krotovina; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 24 to 42 inches thick. The mollic epipedon is 10 to 19 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 20 to 27 percent. Reaction is mildly alkaline or moderately alkaline.

The B2t horizon has a clay content of 27 to 35 percent. Reaction is mildly alkaline or moderately alkaline. The calcium carbonate equivalent content is 5 to 15 percent.

The B3tca horizon has a clay content of 27 to 35 percent. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent content is 16 to 20 percent.

The Cca horizon has texture of silt loam, loam, or silty clay loam. It has a clay content of 15 to 30 percent. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent content is 15 to 24 percent.

Orcky series

The Orcky series consists of very deep, somewhat excessively drained, moderately permeable soils on alluvial fans, lake terraces, and terrace escarpments. These soils formed in alluvium and mixed lake sediment derived dominantly from sedimentary and igneous rocks. Slope is 4 to 40 percent. Elevation is 4,500 to 5,200 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are coarse-loamy over sandy or sandy-skeletal, mixed, mesic Xerollic Calciorthids.

Typical pedon of Orcky gravelly fine sandy loam, 15 to 40 percent slopes, about 1 mile south and 2.5 miles west of Mills, about 100 feet east and 2,470 feet south of the northwest corner of sec. 34, T. 15 S., R. 2 W.

A1—0 to 3 inches; light yellowish brown (10YR 6/4) gravelly fine sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; few very fine pores; 30 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

B2—3 to 11 inches; very pale brown (10YR 7/4) gravelly fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; few very fine pores; 30 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

C1ca—11 to 17 inches; very pale brown (10YR 7/4) gravelly fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; 30 percent gravel; strongly calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.4); clear smooth boundary.

IIC2—17 to 29 inches; very pale brown (10YR 7/4) extremely gravelly loamy sand, brown (10YR 5/3) moist; single grained; loose; few very fine roots; 65 percent gravel; moderately calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.4); gradual wavy boundary.

IIC3—29 to 40 inches; very pale brown (10YR 7/3) extremely gravelly sand, brown (10YR 5/3) moist; single grained; loose; few very fine roots; 65 percent gravel; moderately calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.0); gradual wavy boundary.

IIC4—40 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sand, brown (10YR 5/3) moist; single grained; loose; 65 percent gravel; moderately calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.0).

The solum is 11 to 20 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 10 to 18 percent. It is 15 to 35 percent rock fragments. Reaction is moderately alkaline or strongly alkaline.

The B2 and Cca horizons have texture of gravelly loam or gravelly fine sandy loam. They have a clay content of 10 to 18 percent. They are 15 to 35 percent rock fragments. Reaction is moderately alkaline or strongly alkaline.

The IIC horizon has texture of extremely gravelly sand or very gravelly loamy sand. It has a clay content of 2 to 5 percent. It is 35 to 80 percent rock fragments. Reaction is moderately alkaline to very strongly alkaline.

Parkay series

The Parkay series consists of deep, well drained, moderately slowly permeable soils on mountainsides. These soils formed in colluvium and residuum derived dominantly from quartzite, sandstone, and limestone. Slope is 8 to 70 percent. Elevation is 7,000 to 10,500 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 36 to 45 degrees F.

These soils are loamy-skeletal, mixed Argic Pachic Cryoborolls.

Typical pedon of Parkay very stony loam in an area of Parkay-Rock outcrop complex, 30 to 70 percent slopes, about 6.5 miles northwest of Cedar Fort, about 2,000 feet east and 2,400 feet south of the northwest corner of sec. 9, T. 5 S., R. 3 W.

A11—0 to 4 inches; dark brown (10YR 3/3) very stony loam, very dark brown (10YR 2/2) moist; weak medium platy structure; soft, friable, slightly sticky and plastic; common very fine roots; few fine pores; 25 percent of surface covered with stones; mildly alkaline (pH 7.7); clear smooth boundary.

A12—4 to 18 inches; dark brown (10YR 3/2) cobbly loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and few fine roots; few fine pores; 30 percent cobbles; mildly alkaline (pH 7.8); gradual wavy boundary.

B1—18 to 23 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine pores; 40 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

B2t—23 to 42 inches; yellowish brown (10YR 5/4) very cobbly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; few fine pores; few thin clay films; 55 percent cobbles and gravel; slightly calcareous, carbonates on undersides of rock fragments; moderately alkaline (pH 7.9); gradual wavy boundary.

C—42 to 47 inches; yellowish brown (10YR 5/4) extremely gravelly light clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, firm, sticky and plastic; 80 percent gravel; slightly calcareous, carbonates disseminated and in coatings on undersides of rock fragments; mildly alkaline (pH 7.8); abrupt irregular boundary.

R—47 inches; fractured limestone.

The solum is 30 to 40 inches thick. The mollic epipedon is 21 to 44 inches thick. The control section is 35 to 60 percent rock fragments. Bedrock is at a depth of 40 to 60 inches.

The A1 horizon has a clay content of 10 to 25 percent. It is 25 to 60 percent rock fragments.

The B2t horizon has texture of very cobbly loam, very stony clay loam, or very cobbly clay loam. It has a clay content of 25 to 35 percent. It is 35 to 60 percent rock fragments. Reaction is mildly alkaline or moderately alkaline.

The C horizon has texture of extremely gravelly clay loam or extremely gravelly loam. It has a clay content of 20 to 30 percent. It is 50 to 80 percent rock fragments.

Parleys series

The Parleys series consists of very deep, well drained, moderately slowly permeable soils on lake terraces and alluvial fans. These soils formed in alluvium and lake sediment derived dominantly from quartzite, sandstone, limestone, and andesite. Slope is 0 to 8 percent. Elevation is 4,800 to 5,700 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Calcic Argixerolls.

Typical pedon of Parleys loam, 2 to 4 percent slopes, about 4 miles northwest of Lehi, about 2,300 feet east and 1,000 feet south of the northwest corner of sec. 10, T. 5 S., R. 1 W.

Ap—0 to 6 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine pores; neutral (pH 6.6); clear smooth boundary.

A12—6 to 11 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine roots; few very fine pores; neutral (pH 6.8); clear smooth boundary.

B21t—11 to 15 inches; brown (10YR 4/3) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine pores; common moderately thick clay films; neutral (pH 7.0); clear wavy boundary.

B22t—15 to 19 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine pores; common moderately thick clay films; mildly alkaline (pH 7.6); clear smooth boundary.

B3ca—19 to 26 inches; light brownish gray (10YR 6/2) heavy silty clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine pores; few thin clay films; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C1ca—26 to 30 inches; light brownish gray (10YR 6/2) heavy silty clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; strongly calcareous, carbonates disseminated and in masses; strongly alkaline (pH 9.0); clear smooth boundary.

C2ca—30 to 42 inches; light gray (10YR 7/2) silty clay loam, light brownish gray (10YR 6/2) moist; massive; hard, firm, sticky and plastic; strongly calcareous, carbonates disseminated and in masses; strongly alkaline (pH 9.0); clear smooth boundary.

IIC3—42 to 52 inches; light gray (2.5YR 7/2) silty clay loam, light brownish gray (2.5YR 6/2) moist; massive; hard, firm, sticky and plastic; strongly calcareous, carbonates disseminated; strongly alkaline (pH 9.0); clear smooth boundary.

IIC4—52 to 60 inches; light gray (2.5YR 7/2) silt loam, light olive brown (2.5YR 5/4) moist; massive; soft, friable, sticky and plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8).

The solum is 18 to 33 inches thick. The mollic epipedon is 9 to 20 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent.

The B2t horizon has a clay content of 27 to 35 percent. Reaction is neutral or mildly alkaline.

The Cca horizon has texture of clay loam or silty clay loam. It has a clay content of 27 to 35 percent. The calcium carbonate equivalent is 15 to 40 percent.

The IIC horizon has a clay content of 18 to 27 percent. The calcium carbonate equivalent is 15 to 40 percent.

Pharo series

The Pharo series consists of very deep, well drained, moderately permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone. Slope is 3 to 10 percent. Elevation is 5,000 to 6,400 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Aridic Calcixerolls.

Typical pedon of Pharo very stony loam, 3 to 10 percent slopes, about 19 miles southwest of Nephi, about 1,200 feet north and 2,000 feet west of the southeast corner of sec. 15, T. 14 S., R. 3 W.

A1—0 to 8 inches; brown (10YR 5/3) very stony loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, friable, sticky and plastic; many very fine and fine and few medium roots; few very fine pores between peds; 10 percent stones, 10 percent cobbles, and 20 percent gravel; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

B2—8 to 18 inches; pale brown (10YR 6/3) very cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine and few medium roots; many very fine pores; 10 percent stones, 20 percent cobbles, and 30 percent gravel; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.0); gradual smooth boundary.

C1ca—18 to 29 inches; very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine pores; 50 percent gravel and 10 percent cobbles; very strongly calcareous, carbonates disseminated, in masses, and in coatings on rock fragments; moderately alkaline (pH 8.4); gradual wavy boundary.

C2ca—29 to 40 inches; very pale brown (10YR 7/3) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; many very fine pores; 50 percent gravel and 10 percent cobbles; very strongly calcareous, carbonates disseminated, in masses, and in coatings on rock fragments; moderately alkaline (pH 8.2); gradual wavy boundary.

C3ca—40 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine pores; 60 percent gravel and 10 percent cobbles; very strongly calcareous, carbonates disseminated, in masses, and in coatings on rock fragments; moderately alkaline (pH 8.4).

The solum is 7 to 18 inches thick. The mollic epipedon is 8 to 10 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. It is 35 to 60 percent rock fragments. The calcium carbonate equivalent is 3 to 15 percent.

The B2 horizon has a clay content of 18 to 27 percent. It is 35 to 60 percent rock fragments. The calcium carbonate equivalent is 15 to 40 percent.

The Cca horizon has texture of very gravelly loam or very gravelly sandy loam. It has a clay content of 10 to 18 percent. It is 35 to 80 percent rock fragments. The calcium carbonate equivalent is 40 to 70 percent.

Pibler series

The Pibler series consists of shallow, well drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived from quartzite, sandstone, limestone, and some basic igneous rocks. Slope is 4 to 15 percent. Elevation is 5,000 to 5,900 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic, shallow Xerollic Paleorthids.

Typical pedon of Pibler gravelly fine sandy loam, 4 to 15 percent slopes, about 7 miles west and 2 miles north of Mills, about 700 feet south and 50 feet west of the northeast corner of sec. 15, T. 15 S., R. 3 W.

A11—0 to 4 inches; brown (10YR 5/3) gravelly fine sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine pores; 25 percent gravel; strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.8); clear smooth boundary.

A12—4 to 8 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine very fine roots; few fine pores; 35 percent gravel and 15 percent cobbles; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

C1ca—8 to 13 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine and very fine roots; few fine and very fine pores; 30 percent cobbles, 10 percent gravel; strongly calcareous, carbonates on undersides of rock fragments; moderately alkaline (pH 8.1); clear smooth boundary.

C2ca—13 to 16 inches; very pale brown (10YR 7/3) very cobbly loam, yellowish brown (10YR 5/4) moist; hard, friable, slightly sticky and plastic; few very fine roots; 25 percent cobbles and 25 percent gravel; very strongly calcareous, carbonates in fine hardpan fragments; moderately alkaline (pH 8.0); abrupt smooth boundary.

C3cam—16 to 22 inches; indurated carbonate cemented hardpan that has troweled surface layer.

C4—22 to 60 inches; stratified layers of very gravelly loam and indurated hardpan.

The solum is 7 to 11 inches thick. The petrocalcic horizon is at a depth of 10 to 20 inches. The control section is 35 to 60 percent rock fragments.

The texture of the A12 horizon is gravelly fine sandy loam or cobbly fine sandy loam. The A horizon has a clay content of 15 to 20 percent. It is 15 to 35 percent rock fragments. Reaction is mildly alkaline or moderately alkaline.

The Cca horizon has texture of very gravelly loam or very cobbly loam. It has a clay content of 15 to 25 percent. It is 35 to 60 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 20 to 40 percent.

Pober series

The Pober series consists of moderately deep, well drained, moderately permeable soils on alluvial fans. These soils formed in mixed alluvium derived dominantly from quartzite, limestone, sandstone, and basic igneous rocks. Slope is 4 to 15 percent. Elevation is 5,000 to 5,900 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Xerollic Paleorthids.

Typical pedon of a Pober fine sandy loam in an area of Pober-Pibler complex, 4 to 15 percent slopes, about 5 miles south and 4 miles west of Mills, about 1,400 feet east and 600 feet south of the northwest corner of sec. 20, T. 16 S., R. 2 W.

A11—0 to 4 inches; dark brown (10YR 4/3) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure that parts to weak very fine granular; soft, friable, slightly sticky and slightly plastic; few very fine roots; 5 percent gravel; slightly calcareous, disseminated carbonates; strongly alkaline (pH 8.0); abrupt smooth boundary.

A12—4 to 13 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine pores; 20 percent gravel; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C1ca—13 to 18 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; very hard, brittle, sticky and slightly plastic; few very fine roots; few fine pores; 25 percent gravel and 10 percent cobbles; slightly cemented by lime and some silica layers; rock fragments have thin silica coatings on the lower side; strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.6); gradual smooth boundary.

C2ca—18 to 26 inches; light gray (10YR 7/2) very gravelly loam, pale brown (10YR 6/3) moist; massive; very hard, brittle, slightly sticky and slightly plastic; few very fine roots; 40 percent gravel and hardpan fragments and 10 percent cobbles; some silica layers and silica coatings on undersides of the rock fragments; strongly calcareous, carbonates disseminated and in coatings on rock fragments, strongly alkaline (pH 8.8); abrupt smooth boundary.

C3cam—26 to 32 inches; indurated carbonate cemented hardpan that has some pale brown silica laminae from 1/8 to 1/2 inch thick.

C4—32 to 60 inches; stratified layers of very gravelly loam and indurated hardpan.

The solum is 5 to 13 inches thick. The petrocalcic horizon is at a depth of 20 to 40 inches. The control section is 35 to 50 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A11 horizon has a clay content of 10 to 18 percent. It is 0 to 15 percent rock fragments. The calcium carbonate equivalent content is 1 to 15 percent.

The A12 horizon has texture of gravelly loam, fine sandy loam, or loam. It has a clay content of 15 to 25 percent. It is 0 to 30 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent content is 1 to 15 percent.

The Cca horizon has texture of very gravelly loam or very gravelly sandy loam. It has a clay content of 15 to 25 percent. It is 30 to 50 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 40 percent.

Provo Bay series

The Provo Bay series consists of very deep, poorly drained, slowly permeable soils on flood plains and lake plains. These soils formed in mixed lake sediment and alluvium derived from mixed sedimentary rocks. Slope is 0 to 1 percent. Elevation is 4,490 to 5,000 feet. Average annual precipitation is 10 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mesic Typic Calciaquolls.

Typical pedon of Provo Bay silt loam about 5 miles north of Goshen, about 200 feet south and 400 feet west of the northeast corner of sec. 15, T. 9 S., R. 1 W.

A11—0 to 6 inches; black (10YR 2/1) silt loam, gray (10YR 5/1) dry; moderate medium granular structure; slightly hard, friable, sticky and plastic; common fine and very fine roots; few very fine pores; moderately saline; strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.8); clear smooth boundary.

A12—6 to 15 inches; black (10YR 2/1) silt loam, gray (10YR 5/1) dry; moderate medium granular structure; slightly hard, friable, sticky and plastic; common fine and very fine roots; moderately saline; very strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.6); clear smooth boundary.

C1ca—15 to 37 inches; gray (10YR 5/1) silty clay loam, light gray (10YR 7/1) dry; massive; hard, firm, sticky and plastic; moderately saline; very strongly calcareous, disseminated carbonates; neutral (pH 7.3); clear smooth boundary.

C2—37 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam, white (10YR 8/1) dry; massive; hard, firm, sticky and plastic; strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.5).

The solum is 13 to 27 inches thick. The mollic epipedon is 7 to 15 inches thick. An apparent water table ranges from the surface to a depth of 1 foot throughout the year. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. Reaction is mildly alkaline to strongly alkaline.

The Cca horizon has a clay content of 27 to 35 percent. Reaction is neutral to strongly alkaline.

Reebok series

The Reebok series consists of shallow, well drained, moderately permeable soils on alluvial fans and hillsides. These soils formed in alluvium and colluvium derived from latite, andesite, rhyolite, breccia, quartzite, and limestone. Slope is 4 to 40 percent. Elevation is 4,900 to 6,600 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic, shallow Aridic Petrocalcic Palexerolls.

Typical pedon of Reebok cobbly loam, 15 to 40 percent slopes, about 6.5 miles north and 7.5 miles west of Nephi, about 800 feet east and 2,100 feet north of the southwest corner of sec. 6, T. 12 S., R. 1 W.

A11—0 to 2 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure that parts to moderate fine granular; soft, friable, slightly sticky and slightly plastic; common very fine roots; common fine pores; 20 percent cobbles and gravel; mildly alkaline (pH 7.8); abrupt smooth boundary.

A12—2 to 5 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few medium, fine and very fine roots; common fine pores; 20 percent gravel and cobbles; mildly alkaline (pH 7.8); clear smooth boundary.

B2t—5 to 11 inches; brown (10YR 5/3) very cobbly clay loam, very dark grayish brown (10YR 3/2) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; few medium, fine and very fine roots; common fine pores; 50 percent cobbles and 5 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.

B3ca—11 to 15 inches; grayish brown (10YR 5/2) very cobbly clay loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine and medium roots; common fine pores; 35 percent cobbles and 15 percent hardpan fragments; moderately calcareous; carbonate coatings on the undersides of rock fragments; mildly alkaline (pH 7.8); abrupt smooth boundary.

C1ca—15 to 19 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 5/3) moist; extremely hard, friable, slightly sticky and slightly plastic; discontinuous indurated pan; 60 to 70 percent hardpan fragments; very strongly calcareous; strongly alkaline (pH 8.6); abrupt smooth boundary.

C2cam—19 to 23 inches; indurated carbonate cemented hardpan that has a troweled surface and laminae 2 to 4 mm thick.

C3—23 to 60 inches; stratified layers of extremely gravelly loam and carbonate cemented hardpan.

The solum is 11 to 18 inches thick. The mollic epipedon is 11 to 18 inches thick. The petrocalcic horizon is at a depth of 10 to 20 inches. The control section is 35 to 60 percent rock fragments.

The A1 horizon has a clay content of 18 to 27 percent. It is 25 to 35 percent rock fragments. Reaction is neutral or mildly alkaline.

The B2t horizon has texture of very cobbly clay loam or very gravelly clay loam. It has a clay content of 27 to 35 percent. It is 35 to 60 percent rock fragments. Reaction is neutral or mildly alkaline.

Renol series

The Renol series consists of moderately deep, well drained, moderately permeable soils on alluvial fans. These soils formed in alluvium derived from quartzite, sandstone, latite, andesite, and breccia. Slope is 4 to 8 percent. Elevation is 5,200 to 6,200 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Aridic Petrocalcic Palexerolls.

Typical pedon of Renol stony fine sandy loam, 4 to 8 percent slopes, about 7 miles south and 7 miles west of Mills, about 1,100 feet west and 2,200 feet north of the southeast corner of sec. 36, T. 16 S., R. 3 W.

A11—0 to 3 inches; brown (10YR 5/3) stony fine sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure that parts to weak medium granular; soft, very friable, slightly plastic; common very fine and few fine roots; few fine pores; 2 percent of surface covered with stones; neutral (pH 7.0); clear smooth boundary.

A12—3 to 9 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and few fine roots; few fine pores; 25 percent gravel; neutral (pH 6.8); clear smooth boundary.

B2t—9 to 17 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine and very fine roots; common fine and few very fine pores; few thin clay films on faces of peds and in pores; 40 percent gravel and 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

B3ca—17 to 27 inches; brown (7.5YR 5/4) extremely gravelly clay loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine, and medium roots; few very fine pores; few thin clay films on faces of peds; 40 percent gravel and 30 percent cobbles; weakly cemented by carbonates; strongly calcareous, carbonates in coatings on rock fragments, disseminated, and in veins; strongly alkaline (pH 8.8); abrupt smooth boundary.

C1cam—27 to 32 inches; indurated lime cemented hardpan that has a carbonate cemented laminar capping 1/8 to 1/4 inch thick; clear smooth boundary.

C3—32 to 60 inches; stratified layers of very gravelly sandy loam and carbonate cemented hardpans.

The solum is 24 to 33 inches thick. The mollic epipedon is 8 to 15 inches thick. The control section is 35 to 75 percent rock fragments. The petrocalcic horizon is at a depth of 20 to 40 inches.

The A1 horizon has a clay content of 10 to 18 percent. It is 15 to 35 percent rock fragments. Reaction is neutral or mildly alkaline.

The B2t horizon has texture of very gravelly clay loam, gravelly clay loam, or cobbly clay loam. It has a clay content of 22 to 35 percent. It is 35 to 60 percent rock fragments. Reaction is neutral or mildly alkaline.

The B3ca horizon has texture of very gravelly clay loam or very cobbly clay loam. It has a clay content of 20 to 35 percent. It is 35 to 75 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 25 percent.

Reywat series

The Reywat series consists of shallow, well drained, moderately slowly permeable soils on hillsides and mountainsides. These soils formed in residuum and colluvium derived dominantly from igneous rocks. Slope is 10 to 60 percent. Elevation is 5,000 to 6,600 feet. Average annual precipitation is 12 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Lithic Argixerolls.

Typical pedon of a Reywat very stony loam in an area of Reywat-Rock outcrop complex, 10 to 30 percent slopes, about 5 miles northeast of Cedar Fort, about 1,200 feet west and 1,000 feet north of the southeast corner of sec. 12, T. 5 S., R. 2 W.

A1—0 to 5 inches; brown (10YR 5/3) very stony loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, friable, slightly sticky and plastic; common fine roots; few fine and medium pores; 25 percent cobbles and 12 percent stones; 15 percent of surface covered with gravel; neutral (pH 6.7); clear smooth boundary.

B1—5 to 9 inches; brown (10YR 5/3) cobbly clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few fine and very fine roots; few very fine pores; 10 percent cobbles and 10 percent gravel; neutral (pH 7.3); clear smooth boundary.

B21t—9 to 13 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; in continuous clay films; 25 percent cobbles and 15 percent gravel; slightly calcareous, carbonates in fine veins; moderately alkaline (pH 8.2); gradual wavy boundary.

B22tca—13 to 17 inches; light yellowish brown (10YR 6/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine pores; 40 percent cobbles and 30 percent gravel; slightly cemented to moderately cemented by carbonates and silica; moderately calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.4); abrupt irregular boundary.

R—17 to 19 inches; fractured, partly weathered andesite, moderate coatings of calcium carbonate or basalt on bedrock and in cracks.

The solum is 12 to 20 inches thick. The mollic epipedon is 7 to 11 inches thick. The control section is 35 to 75 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

The A1 horizon has a clay content of 18 to 27 percent. It is 10 to 40 percent rock fragments.

The B1 horizon has a clay content of 27 to 35 percent. It is 15 to 35 percent rock fragments.

The B2t horizon has a texture of very cobbly clay loam or very stony clay loam. It has a clay content of 27 to 35 percent. It is 35 to 75 percent rock fragments. Reaction is neutral to moderately alkaline. The calcium carbonate equivalent is 0 to 15 percent.

Rofiss series

The Rofiss series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from shale. Slope is 4 to 15 percent. Elevation is 5,100 to 5,500 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Xeric Torriorthents.

Typical pedon of Rofiss gravelly clay loam, 4 to 15 percent slopes, about 600 east 500 south in Nephi, about 1,800 feet west and 600 feet south of the northeast corner of sec, 9, T. 13 S., R. 1 E.

A11—0 to 7 inches; pale brown (10YR 6/3) gravelly clay loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure that parts to weak fine granular; soft, firm, sticky and plastic; common fine roots; few fine pores; 10 percent angular cobbles and 20 percent angular pebbles of gravel; very strongly calcareous, carbonates disseminated and in shale fragements; moderately alkaline (pH 8.4); clear smooth boundary.

A12—7 to 12 inches; pale brown (10YR 6/3) very gravelly clay loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; slightly hard, firm, sticky and plastic; few fine roots; few fine pores; 50 percent angular pebbles of gravel; very strongly calcareous, carbonates disseminated and in shale fragments; moderately alkaline (pH 8.4); clear smooth boundary.

C1—12 to 27 inches; light gray (2.5Y 7/2) extremely gravelly clay loam, grayish brown (2.5Y 5/2) moist; weak fine subangular blocky structure; slightly hard, firm, sticky and plastic; few fine roots; few fine pores; 65 percent angular pebbles of gravel; very strongly calcareous, carbonates disseminated and in shale fragments; strongly alkaline (pH 8.6); clear smooth boundary.

C2—27 to 41 inches; light gray (2.5Y 7/2) very gravelly clay loam, grayish brown (2.5Y 5/2) moist; massive; hard, firm, sticky and plastic; few fine roots; few fine pores; 40 percent angular pebbles of gravel; very strongly calcareous, carbonates disseminated and in shale fragments; strongly alkaline (pH 8.6); clear smooth boundary.

C3—41 to 60 inches; light gray (2.5Y 7/2) extremely gravelly clay loam, grayish brown (2.5Y 5/2) moist; massive; hard, firm, sticky and plastic; few fine roots; few fine pores; 75 percent angular pebbles of gravel; strongly calcareous, carbonates disseminated and in shale fragments; strongly alkaline (pH 8.6).

The solum is 12 to 13 inches thick. The control section is 35 to 65 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 27 to 35 percent. It is 30 to 50 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 30 to 50 percent.

The C horizon has texture of very gravelly clay loam or extremely gravelly clay loam. It has a clay content of 27 to 35 percent. It is 35 to 75 percent rock fragments. The calcium carbonate equivalent is 40 to 60 percent.

Roshe Springs series

The Roshe Springs series consists of very deep, poorly drained, moderately permeable soils on flood plains and lake plains. These soils formed in mixed alluvium and lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 1 percent. Elevation is 4,485 to 5,100 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mesic Typic Calciaquolls.

Typical pedon of Roshe Springs silt loam about 9 miles south of Lehi, about 1,600 feet south and 1,600 feet east of the northwest corner of sec. 32, T. 6 S., R. 1 E.

A11—0 to 4 inches; gray (10YR 5/1) silt loam, very dark gray (10YR 3/1) moist; weak medium subangular blocky structure, hard, firm, sticky and plastic; common fine and very fine and few medium roots; few fine pores; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

A12—4 to 9 inches; gray (10YR 5/1) loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; few fine pores; very strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.2); gradual smooth boundary.

C1ca—9 to 14 inches; light gray (10YR 6/1) loam, very dark gray (10YR 3/1) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and few fine roots; few fine pores; very strongly calcareous, carbonates disseminated, in masses, and in snail shells; strongly alkaline (pH 8.6); clear smooth boundary.

C2ca—14 to 22 inches; gray (10YR 6/1) loam, very dark gray (10YR 3/1) moist; massive; hard, friable, slightly sticky and plastic; few fine and very fine roots; few fine pores; very strongly calcareous, carbonates disseminated, in masses, and in snail shells; strongly alkaline (pH 8.8); gradual smooth boundary.

C3ca—22 to 32 inches; gray (10YR 6/1) loam, very dark gray (10YR 4/1) moist; massive; hard, friable, sticky and plastic; very strongly calcareous, carbonates disseminated, in masses, and snail shells; strongly alkaline (pH 8.8); gradual smooth boundary.

C4—32 to 40 inches; gray (10YR 5/1) loam, black (10YR 3/1) moist; massive; very hard, friable, sticky and plastic; very strongly calcareous; strongly alkaline (pH 9.0); gradual smooth boundary.

C5—40 to 60 inches; light gray (10YR 7/1) loam, dark gray (10YR 4/1) moist; massive; very hard, friable, sticky and plastic; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0).

The solum is 9 to 16 inches thick. The mollic epipedon is 9 to 16 inches thick. A water table ranges from the surface to a depth of 1 foot during spring and summer months. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. Reaction is moderately alkaline or strongly alkaline.

The Cca horizon has a clay content of 18 to 27 percent.

Saltair series

The Saltair series consists of very deep, poorly drained, slowly permeable soils on lake plains. These soils formed in mixed lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 1 percent. Elevation is 4,485 to 5,100 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Typic Salorthids.

Typical pedon of Saltair silt loam about 8 miles north of Goshen, about 2,200 feet north and 800 feet west of the southeast corner of sec. 2, T. 9 S., R. 1 W.

A11sa—0 to 1 inch; gray (10YR 5/1) silt loam, light brownish gray (2.5Y 6/2) dry; moderate medium platy structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine pores; strongly saline; strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.8); abrupt smooth boundary.

A12sa—1 inch to 5 inches; gray (10YR 5/1) silt loam, light brownish gray (2.5Y 6/2) dry; moderate medium platy structure; soft, friable, sticky and plastic; few fine and very fine roots; common very fine pores; strongly saline; strongly calcareous, disseminated carbonates; moderately alkaline (pH 7.9); clear smooth boundary.

A13sa—5 to 7 inches; dark gray (10YR 4/1) silt loam, light brownish gray (2.5Y 6/2) dry; moderate fine granular structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine pores; strongly saline; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.0); abrupt wavy boundary.

C1sa—7 to 16 inches; light brownish gray (2.5Y 6/2) silty clay loam, light gray (2.5Y 7/2) dry; moderate medium platy structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine and few fine pores; strongly saline; strongly calcareous, disseminated carbonates; moderately alkaline (pH 7.9); gradual smooth boundary.

C2sa—16 to 31 inches; grayish brown (2.5Y 5/2) silty clay loam, light gray (2.5Y 7/2) dry; massive; slightly hard, firm, sticky and plastic; strongly saline; strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.8); gradual smooth boundary.

C3sa—31 to 41 inches; light brownish gray (2.5Y 6/2) silty clay loam, light gray (2.5Y 7/2) dry; massive; slightly hard, firm, sticky and plastic; strongly saline; strongly calcareous, disseminated carbonates; moderately alkaline (pH 7.9); gradual smooth boundary.

C4sa—41 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam, light gray (2.5Y 7/2) dry; massive; slightly hard, firm, sticky and plastic; strongly saline; strongly calcareous, disseminated carbonates; mildly alkaline (pH 7.8).

The solum is 6 to 10 inches thick. An apparent water table ranges from the surface to a depth of 1 foot during the spring and summer months. The profile is mildly alkaline to very strongly alkaline. Bedrock is at a depth of 60 inches or more.

The A1sa horizon has a clay content of 18 to 27 percent. Electrical conductivity of the saturation extract is 40 to 55 millimhos.

The Csa horizon has a clay content of 27 to 35 percent.

Sandall series

The Sandall series consists of moderately deep, well drained, moderately permeable soils on hillsides. These soils formed in colluvium and residuum derived dominantly from limestone, quartzite, sandstone, and igneous rocks. Slope is 25 to 60 percent. Elevation is 5,000 to 6,400 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Xerollic Calciorthids.

Typical pedon of Sandall very cobbly loam, 25 to 60 percent slopes, about 9 miles east of Leamington, about 400 feet west and 50 feet south of the northeast corner of sec. 6, T. 15 S., R. 2 W.

A1—0 to 5 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, sticky and plastic; few fine and very fine roots; few very fine pores; 20 percent cobbles, 15 percent gravel and 5 percent stones; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

B2—5 to 15 inches; very pale brown (10YR 7/3) very cobbly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, firm, sticky and plastic; common very fine roots and few fine and medium roots; few very fine pores; 30 percent cobbles and 30 percent gravel; very strongly calcareous, carbonates disseminated and in coatings on rock fragments; moderately alkaline (pH 8.4); clear smooth boundary.

C1ca—15 to 20 inches; white (10YR 8/2) very cobbly loam, light gray (10YR 7/2) moist; weak medium subangular blocky structure; slightly hard, firm, sticky and plastic; common very fine roots and few fine and medium roots; few very fine pores; 40 percent gravel and 20 percent cobbles; very strongly calcareous, carbonates disseminated, in masses, and in coatings on rock fragments; moderately alkaline (pH 8.4); clear smooth boundary.

C2ca—20 to 28 inches; white (10YR 8/2) very cobbly loam, very pale brown (10YR 7/3) moist; massive; slightly hard, firm, sticky and plastic; few fine, very fine, and medium roots; few very fine pores; 30 percent cobbles and 30 percent gravel; very strongly calcareous; carbonates disseminated, in masses, and in coatings on rock fragments; moderately alkaline (pH 8.4); gradual smooth boundary.

C3—28 to 32 inches; very pale brown (10YR 8/3) very gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, firm, sticky and plastic; few very fine, fine, and medium roots; few very fine pores; 50 percent gravel and 10 percent cobbles; very strongly calcareous, carbonates disseminated, in masses, and in coatings on rock fragments; moderately alkaline (pH 8.4); abrupt irregular boundary.

R—32 inches; fractured conglomerate.

The solum is 5 to 8 inches thick. The control section is 35 to 60 percent rock fragments. Bedrock is at a depth of 20 to 40 inches.

The A1 horizon has a clay content of 20 to 25 percent. It is 35 to 60 percent rock fragments. Reaction is mildly alkaline or moderately alkaline. The calcium carbonate equivalent content is 15 to 40 percent.

The B2 horizon has texture of very cobbly loam or gravelly loam. It has a clay content of 20 to 27 percent. It is 35 to 60 percent rock fragments. Reaction is mildly alkaline or moderately alkaline. The calcium carbonate equivalent is 40 to 50 percent.

The Cca horizon has texture of very cobbly loam or very gravelly loam. It has a clay content of 20 to 27 percent. It is 35 to 65 percent rock fragments. Reaction is mildly alkaline to strongly alkaline. The calcium carbonate equivalent is 40 to 60 percent.

Sanpete series

The Sanpete series consists of very deep, well drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone, shale, and sandstone. Slope is 4 to 40 percent. Elevation is 4,600 to 5,300 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Xerollic Calciorthids.

Typical pedon of Sanpete gravelly fine sandy loam, 4 to 15 percent slopes, about 6 miles east and 1 mile south of Fairfield, about 600 feet east and 2,400 feet north of the southwest corner of sec. 5, T. 7 S., R. 1 W.

A11—0 to 2 inches; pale brown (10YR 6/3) gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure that parts to moderate medium granular; soft, friable, slightly sticky and slightly plastic; few very fine roots; common fine vesicular pores; 5 percent cobbles and 20 percent gravel; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

A12—2 to 6 inches; pale brown (10YR 6/3) gravelly fine sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; soft, friable, sticky and plastic; few very fine roots; few fine and very fine pores; 20 percent gravel and 10 percent cobbles; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

A13—6 to 12 inches; pale brown (10YR 6/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, friable, sticky and plastic; few very fine roots; few fine and very fine pores; 10 percent cobbles and 35 percent gravel; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C1ca—12 to 21 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; 50 percent gravel and 10 percent cobbles; very strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.8); clear smooth boundary.

C2ca—21 to 32 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, friable, slightly sticky and slightly plastic; few fine roots; few very fine pores; 40 percent gravel, 10 percent cobbles, and 10 percent stones; very strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.8); clear smooth boundary.

C3ca—32 to 42 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; few very fine pores; 40 percent gravel; strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 9.0); gradual smooth boundary.

C4ca—42 to 60 inches; white (10YR 8/3) very gravelly fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 50 percent gravel; very strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 9.0); clear smooth boundary.

The solum is 6 to 12 inches thick. The control section is 40 to 60 percent rock fragments. It has a clay content of 10 to 15 percent. Bedrock is at a depth of 60 inches or more.

The A1 horizon is 15 to 35 percent rock fragments. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 40 percent.

The Cca horizon is 35 to 60 percent rock fragments. The calcium carbonate equivalent is 40 to 60 percent.

Saxby series

The Saxby series consists of shallow, somewhat excessively drained, moderately permeable soils on hillsides. These soils formed in colluvium and residuum derived dominantly from sandstone, quartzite, andesite, and rhyolite. Slope is 10 to 70 percent. Elevation is 4,800 to 6,800 feet. Average annual precipitation is 8 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Lithic Xerollic Calciorthids.

Typical pedon of a Saxby very cobbly loam in an area of Saxby, moist-Rock outcrop complex, 10 to 30 percent slopes, about 5 miles south and 4 miles west of Lehi, about 1,000 feet south and 300 feet east of the northwest corner of sec. 10, T. 6 S., R. 1 W.

A11—0 to 2 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; common very fine vesicular pores; 20 percent cobbles and 20 percent gravel; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); abrupt smooth boundary.

A12—2 to 6 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine and medium roots; common fine pores; 30 percent gravel and 20 percent cobbles; moderately calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 8.6); clear smooth boundary.

B2—6 to 14 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; few medium, fine, and very fine roots; few fine and medium pores; 30 percent gravel and 30 percent cobbles; moderately calcareous, carbonates disseminated and in coatings on the undersides of rock fragments; strongly alkaline (pH 8.8); gradual wavy boundary.

C1ca—14 to 18 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; few very fine roots; few fine pores; 70 percent cobbles and 5 percent gravel; strongly calcareous, carbonates disseminated and in coatings on rock fragments; strongly alkaline (pH 9.0); abrupt smooth boundary.

R—18 inches; fractured sandstone.

The solum is 6 to 14 inches thick. The control section is 35 to 75 percent rock fragments. It has a clay content of 18 to 27 percent. Bedrock is at a depth of 10 to 20 inches.

The A1 horizon is 30 to 50 percent rock fragments. The calcium carbonate equivalent is 3 to 15 percent.

The B2 horizon has texture of extremely cobbly loam or very cobbly loam. It is 35 to 70 percent rock fragments. The calcium carbonate equivalent is 3 to 15 percent.

The Cca horizon has texture of very cobbly loam or extremely cobbly loam. It is 50 to 70 percent rock fragments. The calcium carbonate equivalent is 15 to 40 percent.

Shabliss series

The Shabliss series consists of shallow, well drained, moderately permeable soils on alluvial fans and lake terraces. These soils formed in mixed alluvium and lake sediment derived dominantly from sedimentary and igneous rocks. Slope is 2 to 30 percent. Elevation is 4,700 to 6,000 feet. Average annual precipitation is 8 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy, mixed, mesic, shallow Haploxerollic Durorthids.

Typical pedon of Shabliss very fine sandy loam, 2 to 5 percent slopes, about 4 miles south and 4 miles west of Mills, about 50 feet east and 1,500 feet south of the northwest corner of sec. 16, T. 16 S., R. 2 W.

A1—0 to 4 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure that parts to weak fine granular; soft, friable, slightly plastic; many very fine and few fine roots; many very fine pores; 10 percent gravel-sized silica nodules; moderately calcareous, carbonates disseminated and in nodules; moderately alkaline (pH 8.2); clear smooth boundary.

B1—4 to 9 inches; very pale brown (10YR 7/4) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, friable, slightly plastic; common very fine and few fine roots; many very fine pores; 10 percent gravel-size silica nodules; moderately calcareous, carbonates disseminated and in nodules; moderately alkaline (pH 8.4); clear smooth boundary.

B2—9 to 15 inches; very pale brown (10YR 7/4) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine pores; 15 percent gravel-size silica nodules; strongly calcareous, carbonates disseminated and in nodules; moderately alkaline (pH 8.4); abrupt wavy boundary.

C1sica—15 to 26 inches; pink (7.5YR 8/4) loam, light brown (7.5YR 8/4) loam, light brown (7.5YR 6/4) moist; strong medium platy structure that parts to strong medium subangular blocky; extremely hard, brittle when wet but crushes to slightly sticky and slightly plastic; few very fine roots in cracks; many very fine pores; more than 80 percent silica and carbonate cemented durinodes that have thin opal coatings on undersides of peds; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear wavy boundary.

C2sica—26 to 40 inches; pink (7.5YR 8/4) loam, light brown (7.5YR 6/4) moist; massive; extremely hard, brittle when wet but crushes to slightly sticky and slightly plastic; few very fine roots in cracks; many very fine pores; more than 80 percent silica and carbonate cemented durinodes; very strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear wavy boundary.

C3ca—40 to 60 inches; pink (7.5YR 8/4) loam, light brown (7.5YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.6).

The solum is 12 to 16 inches thick. The duripan is at a depth of 10 to 20 inches. The profile is 0 to 10 percent rock fragments. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 10 to 20 percent. Reaction is moderately alkaline or strongly alkaline.

The B2 horizon has texture of very fine sandy loam or loam. It has a clay content of 14 to 25 percent. Reaction is moderately alkaline or strongly alkaline.

The Csica horizon is 70 to 80 percent durinodes. The calcium carbonate equivalent is 40 to 60 percent.

The Cca horizon has texture of very fine sandy loam or loam. It has a clay content of 14 to 25 percent. Reaction is strongly alkaline or very strongly alkaline. The calcium carbonate equivalent content is 15 to 40 percent.

Sheep Creek series

The Sheep Creek series consists of moderately deep, well drained, moderately permeable soils on mountainsides and hillsides. These soils formed in residuum and colluvium derived dominantly from conglomerate and limestone. Slope is 10 to 70 percent. Elevation is mainly 6,200 to 7,200 feet but rises to 8,500 feet on south-facing slopes. Average annual precipitation is 14 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Calcic Argixerolls.

Typical pedon of a Sheep Creek very cobbly loam, 10 to 30 percent slopes, about 6 miles south and 3 miles east of Nephi, about 900 feet west and 1,300 feet south of the northeast corner of sec. 2, T. 14 S., R. 1 E.

A1—0 to 8 inches; dark brown (7.5YR 4/3) very cobbly loam, dark brown (7.5YR 3/2) moist; weak thin platy structure; soft, friable, slightly sticky and slightly plastic; many very fine roots; many very fine pores; 15 percent cobbles and 25 percent gravel; neutral (pH 7.0); clear smooth boundary.

B2t—8 to 17 inches; brown (7.5YR 5/4) very cobbly clay loam, dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; many very fine pores; many thin clay films; 20 percent cobbles and 30 percent gravel; neutral (pH 7.0); clear smooth boundary.

C1ca—17 to 28 inches; reddish yellow (7.5YR 6/6) very gravelly sandy loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; soft, very friable; few very fine and fine roots; many very fine pores; 15 percent cobbles and 45 percent gravel; strongly calcareous, carbonates disseminated and in coatings on undersides of rock fragments; mildly alkaline (pH 7.6); gradual wavy boundary.

C2r—28 to 38 inches; weathering conglomerate.

R—38 inches; unweathered conglomerate.

The solum is 17 to 24 inches thick. The mollic epipedon is 8 to 10 inches thick. The control section is 40 to 65 percent rock fragments. Bedrock is at a depth of 20 to 40 inches.

The A1 horizon has a clay content of 20 to 25 percent. It is 35 to 50 percent rock fragments.

The B2t horizon has texture of very cobbly clay loam or very gravelly clay loam. It has a clay content of 27 to 35 percent. It is 35 to 60 percent rock fragments. Reaction is neutral or mildly alkaline.

The C horizon has a clay content of 5 to 18 percent. It is 35 to 60 percent rock fragments. Reaction is mildly alkaline or moderately alkaline. The calcium carbonate equivalent is 15 to 25 percent.

The R horizon has texture of weathered or unweathered conglomerate or limestone.

Spager series

The Spager series consists of shallow, somewhat excessively drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from limestone. Slope is 4 to 15 percent. Elevation is 4,600 to 5,600 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic, shallow Xerollic Paleorthids.

Typical pedon of Spager gravelly loam, 4 to 15 percent slopes, about 9 miles east of Fairfield, about 600 feet south and 1,400 feet east of the northwest corner of sec. 16, T. 7 S., R. 1 W.

A1—0 to 4 inches; pale brown (10YR 6/3) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, friable, slightly sticky and plastic; common very fine and few fine roots; common fine pores; 20 percent pebbles and hardpan fragments; strongly calcareous, carbonates disseminated and in hardpan fragments; strongly alkaline (pH 8.6); clear smooth boundary.

C1ca—4 to 13 inches; pale brown (10YR 6/3) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; few medium, fine, and very fine roots; common fine pores; 50 percent pebbles; very strongly calcareous, carbonates disseminated and in hardpan fragments; strongly alkaline (pH 8.8); abrupt smooth boundary.

C2ca—13 to 17 inches; white (10YR 8/2) very gravelly loam, very pale brown (10YR 7/3) moist; massive; soft, friable, slightly sticky and plastic; few very fine roots; 60 percent pebbles and hardpan fragments, 10 percent cobbles; very strongly calcareous, carbonates disseminated and in hardpan fragments; very strongly alkaline (pH 9.4); abrupt smooth boundary.

3cam—17 to 25 inches; indurated carbonate cemented hardpan that has a troweled surface and laminae layers 2 millimeters to 1 centimeter thick.

C4—25 to 60 inches; stratified layers of very gravelly loam and carbonate cemented hardpans.

The solum is 2 to 5 inches thick. The petrocalcic horizon is at a depth of 10 to 20 inches. The control section is 35 to 75 percent rock fragments.

The A1 horizon has a clay content of 18 to 27 percent. It is 20 to 35 percent rock fragments. The calcium carbonate equivalent is 15 to 40 percent.

The C horizon has a clay content of 18 to 27 percent. It is 35 to 75 percent rock fragments. The calcium carbonate equivalent is 40 to 70 percent.

Starley series

Starley series consists of shallow, excessively drained, moderately permeable soils on mountainsides. These soils formed in colluvium and residuum derived dominantly from limestone. Slope is 8 to 70 percent. Elevation is 7,000 to 11,650 feet. Average annual precipitation is 22 to 30 inches, and mean annual air temperature is 36 to 45 degrees F.

These soils are loamy-skeletal, mixed Lithic Cryoborolls.

Typical pedon of a Starley very cobbly loam in an area of Starley-Rock outcrop complex, 30 to 70 percent slopes, about 4 miles west of Cedar Fort, about 2,100 feet north and 900 feet west of the southeast corner of sec. 33, T. 5 S., R. 3 W.

A11—0 to 6 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, friable, slightly plastic; few very fine, fine, and medium roots; 50 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary.

A12—6 to 16 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and few fine, medium, and coarse roots; few fine pores; 50 percent cobbles and 10 percent stones; mildly alkaline (pH 7.6); clear smooth boundary.

C—16 to 19 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; massive; soft, firm, slightly sticky and plastic; few fine and very fine roots; few fine pores; 50 percent cobbles and 10 percent stones; carbonates in coatings on rock fragments; moderately alkaline (pH 7.9); abrupt smooth boundary.

R—19 inches; fractured limestone.

The solum is 14 to 18 inches thick. The mollic epipedon is 14 to 18 inches thick. The control section is 35 to 70 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

The A1 horizon has a clay content of 18 to 27 percent. It is 35 to 60 percent rock fragments. Reaction is neutral to moderately alkaline.

The C horizon has a clay content of 18 to 27 percent. It is 35 to 80 percent rock fragments. Reaction is neutral to moderately alkaline.

Sumine series

The Sumine series consists of moderately deep, well drained, moderately permeable soils on hillsides and mountainsides. These soils formed in alluvium and colluvium derived dominantly from welded breccia, rhyolite, and latite. Slope is 10 to 60 percent. Elevation is 5,300 to 6,900 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Aridic Argixerolls.

Typical pedon of Sumine very cobbly loam, 10 to 30 percent slopes, about 6 miles west and 5 miles north of Nephi, about 2,400 feet west and 2,500 feet north of the southeast corner of sec. 8, T. 12 S., R. 1 W.

A11—0 to 2 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; few fine pores; 5 percent of surface covered with stones; 20 percent cobbles and 10 percent gravel; mildly alkaline (pH 7.8); abrupt smooth boundary.

A12—2 to 5 inches; dark grayish brown (10YR 4/2) very cobbly clay loam, very dark brown (10YR 2/2) moist; strong fine granular structure; slightly hard, firm, sticky and plastic; common very fine roots and few fine and medium roots; common fine pores; 20 percent cobbles, 20 percent gravel and 5 percent stones; mildly alkaline (pH 7.8); clear smooth boundary.

B21t—5 to 9 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; hard, very firm, very sticky and very plastic; few coarse and medium roots; common fine pores; 15 percent cobbles and 40 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.

B22t—9 to 15 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; strong fine angular blocky structure; very hard, very firm, very sticky and very plastic; few medium, fine, and very fine roots; few fine pores; 25 percent cobbles and 10 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.

B31—15 to 20 inches; yellowish brown (10YR 5/4) very cobbly heavy clay loam, brown (10YR 4/3) moist; strong medium angular blocky structure; very hard, very firm, very sticky and very plastic; few fine and medium roots; few fine pores; 25 percent cobbles and 10 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.

B22t—20 to 26 inches; yellowish brown (10YR 5/4) very cobbly light clay, brown (10YR 4/3) moist; strong medium angular blocky structure; extremely hard, very firm, very sticky and very plastic; few fine and medium roots; 60 percent cobbles, clay between rock fragments and in fissures and cracks; mildly alkaline (pH 7.8); gradual wavy boundary.

Cr—26 to 30 inches; saprolite; common thick clay films in rock fissures; moderately alkaline (pH 8.0).

The solum is 23 to 39 inches thick. The mollic epipedon is 8 to 19 inches thick. The control section is 35 to 65 percent rock fragments. Bedrock is at a depth of 20 to 40 inches.

The A1 horizon has a clay content of 10 to 20 percent. It is 35 to 50 percent rock fragments. Reaction is neutral to moderately alkaline.

The B2t horizon has texture of very gravelly clay loam or very cobbly loam. It has a clay content of 20 to 35 percent. It is 35 to 65 percent rock fragments. Reaction is neutral to moderately alkaline.

Taylorsville series

The Taylorsville series consists of very deep, well drained, slowly permeable soils on lake terraces. These soils formed in mixed lake sediment derived dominantly from sedimentary rocks. Slope is 0 to 8 percent. Elevation is 4,700 to 5,200 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Calcixerollic Xerochrepts.

Typical pedon of Taylorsville silt loam, 2 to 4 percent slopes, about 4 miles west of Lehi, about 2,000 feet south and 1,000 feet west of the northeast corner of sec. 16, T. 5 S., R. 1 W.

Ap1—0 to 2 inches; light brownish gray (10YR 6/2) silt loam, dark brownish gray (10YR 4/2) moist; moderate fine granular structure; soft, friable, sticky and plastic; few very fine roots; few very fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); abrupt smooth boundary.

Ap2—2 to 7 inches; light brownish gray (10YR 6/2) silt loam, dark brownish gray (10YR 4/2) moist; weak medium subangular blocky structure; soft, friable, sticky and plastic; few very fine roots; few very fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C1ca—7 to 13 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, friable, sticky and plastic; few very fine roots; few fine and very fine pores; strongly calcareous, carbonates disseminated and in veins; strongly alkaline (pH 8.9); clear smooth boundary.

C2ca—13 to 18 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine roots; few fine and very fine pores; strongly calcareous, carbonates disseminated and in veins; strongly alkaline (pH 8.8); clear smooth boundary.

C3ca—18 to 27 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, carbonates disseminated and in veins; strongly alkaline (pH 9.0); clear smooth boundary.

C4ca—27 to 39 inches; pale brown (10YR 6/3) silty clay loam, olive brown (2.5Y 4/4) moist; moderate medium subangular blocky structure; few very fine roots; few very fine pores; strongly calcareous, carbonates disseminated and in veins; very strongly alkaline (pH 9.4); gradual smooth boundary.

C5ca—39 to 52 inches; very pale brown (10YR 7/3) silty clay loam, light olive brown (2.5Y 5/4) moist; moderate medium platy structure; hard, firm, very sticky and very plastic; strongly calcareous, carbonates disseminated; strongly alkaline (pH 9.0); clear smooth boundary.

C6—52 to 63 inches; light gray (2.5Y 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; few very fine distinct dark brown mottles; moderate medium platy structure; hard, friable, sticky and plastic; strongly calcareous, carbonates disseminated; strongly alkaline (pH 9.0).

The solum is 5 to 15 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. The calcium carbonate equivalent is 3 to 15 percent.

The Cca horizon has a clay content of 27 to 35 percent. The calcium carbonate equivalent is 15 to 30 percent.

Thiokol series

The Thiokol series consists of very deep, well drained, moderately permeable soils on lake terraces. These soils formed in mixed lake sediment derived dominantly from sedimentary and igneous rocks. Slope is 0 to 2 percent. Elevation is 4,800 to 5,100 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Xerollic Calciorthids.

Typical pedon of Thiokol silt loam, dry, 0 to 2 percent slopes, about 3 miles east and 1.5 miles south of Cedar Fort, about 200 feet east and 50 feet south of the northwest corner of sec. 14, T. 6 S., R. 2 W.

A11—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (2.5Y 5/2) moist; weak medium platy structure that parts to moderate fine granular; slightly hard, friable, slightly sticky and plastic; few very fine and fine roots; common very fine vesicular pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); abrupt smooth boundary.

A12—3 to 6 inches; light gray (10YR 7/2) silt loam, light brownish gray (2.5Y 6/2) moist; moderate medium platy structure; hard, friable, slightly sticky and plastic; common very fine roots; few fine and very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); clear smooth boundary.

A13—6 to 10 inches; very pale brown (10YR 7/3) silt loam, grayish brown (2.5Y 5/3) moist; moderate medium platy structure; hard, friable, slightly sticky and plastic; common very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); clear smooth boundary.

B21—10 to 17 inches; light gray (10YR 7/2) silt loam, grayish brown (2.5Y 5/2) moist; weak medium platy structure that parts to moderate medium subangular blocky; slightly hard, friable, slightly sticky and plastic; few very fine roots; few fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.5); clear smooth boundary.

B22—17 to 23 inches; very pale brown (10YR 7/3) silt loam, grayish brown (2.5Y 5/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; few very fine roots; few fine pores; strongly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); gradual smooth boundary.

C1ca—23 to 36 inches; light gray (2.5Y 7/2) light silty clay loam, light brownish gray (2.5Y 6/2) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, carbonates disseminated and in masses; strongly alkaline (pH 9.0); gradual smooth boundary.

C2ca—36 to 47 inches; light brownish gray (2.5Y 6/2) silty clay loam, grayish brown (2.5Y 5/2) moist; few medium distinct (7.5YR 5/6) mottles; strong medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few fine pores; strongly calcareous, carbonates disseminated and in masses; moderately alkaline (pH 8.3); gradual wavy boundary.

C3—47 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam, grayish brown (2.5Y 5/2) moist; few fine distinct (7.5YR 5/6) mottles; strong coarse subangular blocky structure; hard, firm, sticky and plastic; few fine pores; strongly calcareous, carbonates disseminated; strongly alkaline (pH 9.0).

The solum is 6 to 14 inches thick. The profile has hue of 10YR or 2.5Y. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 30 percent.

The B2 horizon has texture of silt loam or loam. It has a clay content of 18 to 27 percent. Reaction is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 15 to 30 percent.

The Cca horizon has texture of silty clay loam or silt loam. It has a clay content of 18 to 35 percent. The calcium carbonate equivalent content is 30 to 40 percent.

Truesdale series

The Truesdale series consists of moderately deep, well drained, moderately permeable soils on alluvial fans. These soils formed in alluvium derived dominantly from andesite, basalt, and limestone. Slope is 2 to 4 percent. Elevation is 5,200 to 6,000 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are coarse-loamy, mixed, mesic Haploxerollic Durorthids.

Typical pedon of Truesdale fine sandy loam, 2 to 4 percent slopes, about 22 miles west of Nephi, about 500 feet east and 1,500 feet south of the northwest corner of sec. 9, T. 13 S., R. 3 W.

A1—0 to 3 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure that parts to weak fine granular; soft, very friable; few fine and medium roots; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.2); clear smooth boundary.

B21—3 to 9 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable; few fine and medium roots; common very fine and few fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); gradual smooth boundary.

B22—9 to 17 inches; very pale brown (10YR 7/3) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable; few fine and medium roots; common very fine and few fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); gradual wavy boundary.

B23—17 to 25 inches; very pale brown (10YR 7/3) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable; few fine and medium roots; common very fine and few fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear wavy boundary.

C1sica—25 to 46 inches; very pale brown (10YR 7/3) strongly cemented hardpan; brittle; few very fine pores; the hardpan does not break down in acid and has a troweled surface layer that restricts roots; gradual wavy boundary.

C2—46 to 60 inches; very pale brown (10YR 8/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable; strongly calcareous; disseminated carbonates; strongly alkaline (pH 9.0).

The solum is 16 to 26 inches thick. The profile is 10 to 18 percent clay. A strongly cemented silica and carbonate hardpan is at a depth of 20 to 40 inches. Bedrock is at depth of 60 inches or more.

The A1 horizon has a calcium carbonate equivalent of 3 to 20 percent.

The B2 horizon is moderately alkaline or strongly alkaline. The calcium carbonate equivalent is 3 to 30 percent.

The Csicam horizon has a calcium carbonate equivalent of 18 to 40 percent.

Wales series

The Wales series consists of very deep, well drained, moderately permeable soils on alluvial fans. These soils formed in mixed alluvium derived dominantly from quartzite, sandstone, and limestone. Slope is 2 to 4 percent. Elevation is 4,700 to 6,200 feet. Average annual

precipitation is 10 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed (calcareous), mesic Xeric Torrifluvents.

Typical pedon of Wales loam, 2 to 4 percent slopes, about 1.5 miles northeast of Cedar Fort, about 1,700 feet east and 1,000 feet south of the northwest corner of sec. 33, T. 5 S., R. 2 W.

Ap—0 to 7 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium platy structure; soft, friable, slightly sticky and plastic; few very fine roots; common very fine vesicular pores; slightly calcareous, disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

A12—7 to 13 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; hard, friable, sticky, and plastic; few very fine roots; few medium, fine, and very fine pores; slightly calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

C1—13 to 25 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; few very fine roots; few very fine pores; moderately calcareous, disseminated carbonates; moderately alkaline (pH 8.4); gradual smooth boundary.

C2—25 to 43 inches; brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

IIC3—43 to 60 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; moderately calcareous, disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

The solum is 5 to 13 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 18 to 27 percent. Reaction is moderately alkaline or strongly alkaline.

The C horizon has texture of loam or silt loam. It has a clay content of 18 to 27 percent.

Wallsburg series

The Wallsburg series consists of shallow, well drained, moderately slowly permeable soils on mountainsides. These soils formed in colluvium and residuum derived dominantly from andesite, latite, quartzite, and sandstone. Slope is 25 to 70 percent. Elevation is 5,800 to 8,000 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls.

Typical pedon of a Wallsburg very cobbly loam in an area of Wallsburg-Yeates Hollow complex, 25 to 40 percent slopes, about 10 miles west of Camp Williams, about 1,800 feet north and 2,400 feet east of the southwest corner of sec. 30, T. 4 S., R. 2 W.

A11—0 to 3 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few fine pores; 5 percent stones, 25 percent cobbles, and 10 percent gravel; neutral (pH 7.2); abrupt smooth boundary.

A12—3 to 10 inches; dark grayish brown (10YR 4/2) very cobbly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine and medium roots; few fine and very fine pores; 5 percent stones, 25 percent cobbles, and 10 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.

B21t—10 to 16 inches; pale brown (10YR 6/3) very gravelly clay, brown (10YR 5/3) moist; strong angular blocky structure; hard, firm, very sticky and very plastic; few fine and medium roots; common moderately thick clay films on faces of peds and rock fragments; 30 percent gravel and 10 percent cobbles; mildly alkaline (pH 7.8); gradual wavy boundary.

B22t—16 to 19 inches; pale brown (10YR 6/3) very gravelly clay, olive brown (2.5YR 4/4) moist; strong angular blocky structure; hard, firm, sticky and plastic; 40 percent gravel and 15 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

R—19 inches; unweathered bedrock.

The solum is 10 to 20 inches thick. The mollic epipedon is 8 to 11 inches thick. The control section is 35 to 60 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

The A1 horizon has a clay content of 18 to 27 percent. It is 35 to 60 percent rock fragments. Reaction is neutral to moderately alkaline.

The B2t horizon has texture of very gravelly clay or very gravelly clay loam. It has a clay content of 35 to 50 percent. It is 35 to 75 percent rock fragments. Reaction is mildly alkaline or moderately alkaline.

Woodrow series

The Woodrow series consists of very deep, well drained, slowly permeable soils on lake terraces. These soils formed in mixed lake sediment and alluvium derived dominantly from sedimentary rocks. Slope is 0 to 5 percent. Elevation is 4,550 to 5,500 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed (calcareous), mesic Xeric Torrifluvents.

Typical pedon of Woodrow silt loam, 0 to 1 percent slopes, about 1/4 mile southwest of Fairfield, about 1,000 feet east and 1,400 feet south of the northwest corner of sec. 32, T. 6 S., R. 2 W.

A1—0 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure that parts to moderate fine granular; soft, friable, sticky and plastic; few very fine roots; few very fine pores; strongly calcareous, disseminated carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary.

C1—5 to 15 inches; light gray (2.5Y 7/2) silty clay loam, light olive brown (2.5Y 5/4) moist; moderate medium platy structure; hard, firm, sticky and plastic; few medium, fine, and very fine roots; few fine and very fine pores; strongly calcareous; disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C2—15 to 20 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; massive; soft, friable, sticky and plastic; 10 percent gravel; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

C3—20 to 30 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; massive; soft, firm, sticky and plastic; strongly calcareous, disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

C4—30 to 40 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, firm, sticky and plastic; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.2); gradual smooth boundary.

C5—40 to 60 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; strongly calcareous, disseminated carbonates; very strongly alkaline (pH 9.4).

The solum is 5 to 12 inches thick. Bedrock is at a depth of 60 inches or more.

The A1 horizon has a clay content of 5 to 27 percent.

The C horizon has a clay content of 27 to 35 percent. Reaction is strongly alkaline or very strongly alkaline.

Yeates Hollow series

The Yeates Hollow series consists of very deep, well drained, slowly permeable soils on mountainsides, foot slopes, and alluvial fans. These soils formed in alluvium and colluvium derived dominantly from conglomerate, quartzite, and sandstone. Slope is 6 to 70 percent. Elevation is 6,000 to 8,000 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 41 to 45 degrees F.

These soils are clayey-skeletal, montmorillonitic, frigid Typic Argixerolls.

Typical pedon of Yeates Hollow very stony loam, 40 to 70 percent north slopes, about 1 mile north and 3 miles west of Cedar Fort, about 1,800 feet south and 2,400 feet east of the northwest corner of sec. 34, T. 5 S., R. 3 W.

A11—0 to 4 inches; very dark grayish brown (10YR 3/2) very stony loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and few fine roots; few very fine pores; 15 percent stones, 15 percent cobbles, and 5 percent gravel; neutral (pH 6.6); clear smooth boundary.

A12—4 to 12 inches; dark grayish brown (10YR 4/2) very stony loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine, medium, and coarse roots; few fine and medium pores; 10 percent stones, 20 percent cobbles and 10 percent gravel; neutral (pH 6.6); gradual smooth boundary.

A3—12 to 17 inches; brown (10YR 4/3) very stony loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and medium roots; few fine and medium pores; 20 percent stones, 20 percent cobbles, and 10 percent gravel; neutral (pH 6.7); clear smooth boundary.

B2t—17 to 34 inches; light yellowish brown (10YR 6/4) extremely stony clay, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; hard, very firm, very sticky and very plastic; few fine, medium, and coarse roots; few fine pores; many moderately thick clay films; 30 percent cobbles, 20 percent stones, and 20 percent gravel; neutral (pH 7.0); gradual wavy boundary.

B3t—34 to 45 inches; yellowish brown (10YR 5/4) extremely stony clay loam, brown (10YR 4/3) moist; strong fine angular blocky structure; hard, very firm, sticky and plastic; few fine and medium roots; few fine pores; common moderately thick clay films; 40 percent stones, 20 percent cobbles, and 10 percent gravel; neutral (pH 7.2); gradual wavy boundary.

C—45 to 60 inches; yellowish brown (10YR 5/4) extremely stony sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable; few fine roots; 40 percent stones, 20 percent cobbles, and 10 percent gravel; neutral (pH 6.6).

The solum is 36 to 60 inches thick. The mollic epipedon is 7 to 17 inches thick. The control section is 35 to 70 percent rock fragments. Bedrock is at a depth of 40 to 60 inches or more.

The A1 horizon has a clay content of 20 to 25 percent. It is 15 to 35 percent rock fragments. Reaction is slightly acid or neutral.

The B2t horizon has texture of extremely stony clay, very cobbly clay, or extremely stony clay loam. It has a clay content of 35 to 60 percent. It is 35 to 70 percent rock fragments. Reaction is slightly acid or neutral.

The C horizon has texture of extremely stony sandy loam or extremely cobbly sandy loam. It has a clay content of 10 to 20 percent. It is 50 to 70 percent rock fragments.

formation of the soils

This section describes how the factors of soil formation have affected the formation of soils in the survey area.

The characteristics of a soil at any given point are determined by the parent material; the climate under which the soil material accumulated and has existed since accumulation; the relief, or topography, which influences the local or internal environment of the soil and its drainage, moisture content, aeration, susceptibility to erosion, and exposure to sun and wind; the biological forces, or the plants and animals living on or in the soil, that have acted upon the soil material; and the length of time the climatic and biological forces have acted on the soil material.

The soils in the Fairfield-Nephi survey area show the interaction of all five factors of soil formation.

parent material

The mineralogy of soils is influenced by the mineralogy of the rocks from which the soils formed. Soils such as those in the Pharo, Amtoft, and Lundy series have a high carbonate or lime content because they formed primarily from limestone. Hiko Peak, Donnardo, and Saxby soils contain less carbonates because the sandstone, conglomerate, and igneous rocks from which they formed contain fewer carbonates.

In areas where cemented hardpans have formed, soils that weathered from limestone parent material form a hardpan in which carbonates are the primary cementing agent. Borvant and Spager soils are examples. Soils weathered from igneous rock, such as the Jericho and Truesdale soils, form a hardpan in which silica is the primary cementing agent. This is common in Tintic Valley.

Hardness of rock affects soil formation on hillsides and mountainsides. Deeper soils, such as the moderately deep Sheep Creek soils and the very deep Bezzant soils, formed over sandstone and conglomerate. Shallow soils, such as Wallsburg and Lodar soils, are more common over harder bedrock, such as quartzite and limestone.

The sandy Linoyer and Medburn soils formed from weathering sandstone and rhyolite. This is common on the western slopes of the Goshen Valley. Finer textured soils, such as the Rofiss and Moroni soils, formed from shale and limestone, which is common along the eastern slopes of the Juab Valley.

climate

The climate in the survey area ranges from semiarid to humid. The semiarid climate is at the lower elevations. It consists of an 8- to 12-inch average annual precipitation, a mesic temperature regime that has a mean annual air temperature of 45 degrees F. or more and warm summer temperatures, and a freeze-free season of 100 to 140 days. The humid climate, at the higher elevations, consists of a 25- to 35-inch average annual precipitation, a cryic temperature regime that has a mean annual air temperature of 45 degrees F. or less and cool summer temperatures, and a freeze-free season of 30 to 80 days.

The influences of climate on soil formation are mainly the amount of organic matter accumulation in the surface layer, the translocation of minerals and clays, and the development of distinct soil horizons.

Soils formed in the high mountains, where average annual precipitation is over 25 inches, tend to be more acid. Flygare and Mortenson soils are examples. In these soils the increased amount of deep percolation has leached the soluble salts and carbonates out of the upper soil layers. This deep percolation has also removed some of the fine clay minerals out of the surface layer and has deposited them in a lower layer. The lower layer then becomes high in clay content and slowly permeable.

Soils formed in semidesert, where average annual precipitation is 8 to 12 inches, are more alkaline because less water moves through these soils. Genola and Linoyer series are examples of the more alkaline soils. Thus, the soluble salts, carbonates, and clay sized particles are not leached or moved downward. Finer textured soils in semidesert, such as the Harding and Mellor soils, further restrict percolation, which, in turn, causes a high salt content that is toxic to most plants.

Climate also influences the soils in the survey area by differences in the kind and amount of vegetation produced. In the humid climate the vegetation is mainly aspen and fir trees, and in the semiarid climate the vegetation is mainly sagebrush, juniper trees, and drought-tolerant grasses.

relief

Relief, or landform, affects soil formation principally by its influence on runoff, drainage, and microclimate.

Steepness of slope and the direction that the slope faces are important in soil formation.

The dominant landforms, or topographic features, in the survey area are flood plains, lake plains, valley bottoms, stream terraces, and alluvial plains; alluvial fans, lake terraces, and terrace escarpments; and foothills, mountains, and high mountains.

The Roshe Springs and Provo Bay soils are on flood plains and lake plains. These soils have a fluctuating water table, which causes air to oxidize the iron. This produces yellowish brown, brown, or yellowish red mottles. Where the oxygen is severely restricted by water, the iron is reduced and the soil material is gray or olive gray in color. Water loving plants produce an abundant supply of organic matter, so the surface layer is thick black or dark grayish brown in color.

The Parleys and Taylorsville soils are mainly on lake terraces and lake escarpments of prehistoric Lake Bonneville, in the north end of Cedar Valley. The Parleys soils have an A1 and a B2t horizon and horizons where lime has accumulated. The Taylorsville soils do not have the B2t horizon but do have a horizon of accumulated lime.

The landscape consists mostly of sloping or moderately sloping foothills rising to steep or very steep mountain sides and small, intervening valleys and ridges. The steep slopes cause differences in climate. Steep, south-facing slopes are warmer and dryer than the steep, north-facing slopes. Snow melts more rapidly, water runs off readily, and evaporation losses are higher on south-facing slopes. North-facing slopes are cooler, evaporation is less, and more of the precipitation enters the soils. Water percolates deeply into these north-facing soils. This leaches soluble salts, carbonates, and clay from the A horizon and transports them to deeper horizons where they accumulate. Vegetation is more dense on north-facing slopes than on south-facing slopes at the same elevation. Also north-facing slopes are generally deeper over bedrock than south-facing slopes.

Hamtah and Kitchell soils are on northern exposures, mostly under a dense cover of maple, oak, and fir trees. They have a thick, dark surface layer and are very deep to bedrock. Lundy and Sheep Creek soils are usually on southern exposures under a cover of drought-tolerant grasses and low shrubs. They have a thin, dark surface layer. The Lundy soils are shallow to bedrock, and the Sheep Creek soils are moderately deep to bedrock.

plants and animals

Plants influence the kind, amount, and position of the organic matter incorporated into soils. Living organisms influence soil structure and porosity and, thus, influence the rate of air and water movement through the soil. Plants and animals mix the soil and retard the formation of horizons in places. The decaying forest litter produces acids. These acids in the soil solution hasten the leaching processes, so bases are leached readily from the soil.

Reeds, sedges, and wiregrass on the wet flood plains and valley bottoms contribute large amounts of organic matter to the Roshe Springs and Provo Bay soils. This causes a thick, dark surface layer. Soils that form on mountain slopes under oak, maple, and aspen, such as the Hamtah and Flygare soils, form a thick, dark surface layer that is high in organic matter. Mountain soils that form under conifers, as the Mortenson soil, often have a thin surface layer that is low in organic matter.

Soils on alluvial fans in valleys, such as the Borvant and Fontreen soils, are low in organic matter. They have a cover of juniper trees, which extend roots laterally and remove moisture and nutrients near the surface. This leaves little moisture and nutrients to support grass or other vegetation.

time

The kinds of horizons that develop and the degree of their expression depend on the length of time soil forming processes have been active on the parent materials. The amount of time varies from a few years to centuries. Also, soil formation is generally slower and less expressive at the more arid, lower elevations than in the humid mountains.

The soils on alluvial fans, lake terraces, and flood plains, such as those of the Genola, Linoyer, and Medburn series, have the least degree of horizon differentiation. They have formed from sediment from hills and mountains along the valleys. This formation has been a continuous process since the prehistoric Lake Bonneville receded.

Soils that are somewhat older, on the upper lake terraces and alluvial fans, such as the Parleys and Nephi soils, have more horizon development. Carbonates in these soils have leached from the A1 and B2 horizons and have been deposited in the C horizon. Also, some clay particles have been translocated from the A1 horizon to form an argillic B2t horizon.

Soils that have the strongest expression of horizons, and probably among the oldest soils, are those of the Yeates Hollow, Manila, and Wallsburg series. These soils formed in material weathered from sandstone, quartzite, or conglomerate bedrock. These soils are on mountain slopes, mainly under grass and shrubs. Carbonates have been leached out of the A1 and B2 horizons. Much clay has been leached out of the A1 horizon to form an argillic B2t horizon that contains 35 percent or more clay.

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glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	Less than 2
Low	2.0—3.75
Moderate	5.0—7.5
High	More than 10.0

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or arresting grazing for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.
Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.
Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.
Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.
Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.
Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.
Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 37.5 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake in inches per hour is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor filter (in tables). Because of rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor, on the basis of how much the present plant community has departed from the potential.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 mm in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial melt water. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Water-supplying capacity. Water stored in the soil at the beginning of plant growth in the spring, plus rainfall not in excess of evapo-transperation during the growing season, less runoff.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

LEGEND

DOMINANTLY POORLY DRAINED AND SOMEWHAT POORLY DRAINED, LEVEL SOILS ON FLOOD PLAINS AND LAKE PLAINS

1 — Benjamin-Roshe Springs-Saltair: Very deep, poorly drained and somewhat poorly drained, level soils; on flood plains and lake plains

DOMINANTLY WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, LEVEL TO STEEP SOILS AND DUNE LAND ON LAKE PLAINS, LAKE TERRACES, AND ALLUVIAL FANS IN A SEMIARID CLIMATE ZONE

2 — Cheebe-Harding-Mellor: Very deep, well drained, level and gently sloping soils; on flood plains, lake terraces, and alluvial fans

3 — Genola-Linoyer-Medburn: Very deep, well drained, level to sloping soils; on alluvial fans, lake terraces, and flood plains

4 — Truesdale-Linoyer: Moderately deep and very deep, well drained, nearly level to sloping soils; on alluvial fans and lake terraces

5 — Jericho-Hiko Peak-Medburn: Shallow and very deep, well drained, gently sloping to steep soils; on alluvial fans

6 — Goldrun-Dune land: Very deep, somewhat excessively drained, nearly level to sloping soils and Dune land; on lake terraces and alluvial fans

DOMINANTLY WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED' LEVEL TO STEEP SOILS ON ALLUVIAL FANS AND LAKE TERRACES IN A DRY, SUBHUMID CLIMATE ZONE

7 — Juab-Nephi: Very deep, well drained, level to sloping soils; on alluvial fans and lake terraces

8 — Donnardo-Borvant-Juab: Shallow and very deep, well drained and somewhat excessively drained, gently sloping to steep soils; on alluvial fans and lake terraces

DOMINANTLY WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, SLOPING TO VERY STEEP SOILS AND ROCK OUTCROP ON HILLSIDES, RIDGES, AND MOUNTAINSIDES

9 — Amtoft-Rock outcrop-Reywat: Shallow, well drained and somewhat excessively drained, sloping to very steep soils and Rock outcrop; on hillsides, ridges, and mountainsides

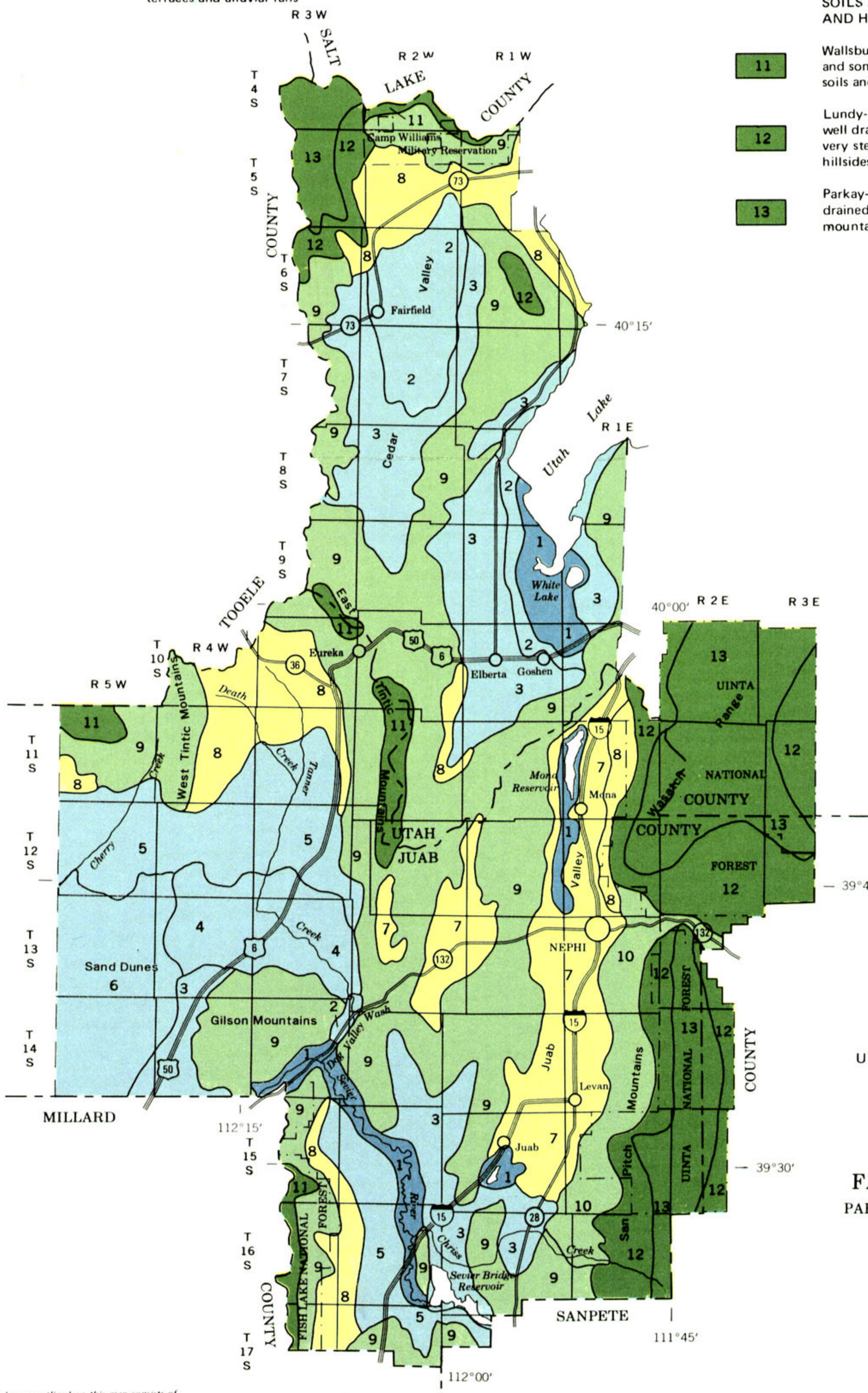
10 — Xeric Torriorthents-Rock outcrop-Lodar: Shallow and moderately deep, well drained and somewhat excessively drained, sloping to very steep soils and Rock outcrop; on hillsides

DOMINANTLY WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, SLOPING TO VERY STEEP SOILS AND ROCK OUTCROP ON MOUNTAINSIDES AND HILLSIDES

11 — Wallsburg-Agassiz-Rock outcrop: Shallow, well drained and somewhat excessively drained, steep and very steep soils and Rock outcrop; on mountainsides

12 — Lundy-Hamtah-Rock outcrop: Shallow and very deep, well drained and somewhat excessively drained, steep and very steep soils and Rock outcrop; on mountainsides and hillsides

13 — Parkay-Flygare-Rock outcrop: Deep and very deep, well drained, sloping to very steep soils and Rock outcrop; on mountainsides



Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

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GENERAL SOIL MAP

FAIRFIELD-NEPHI AREA, UTAH

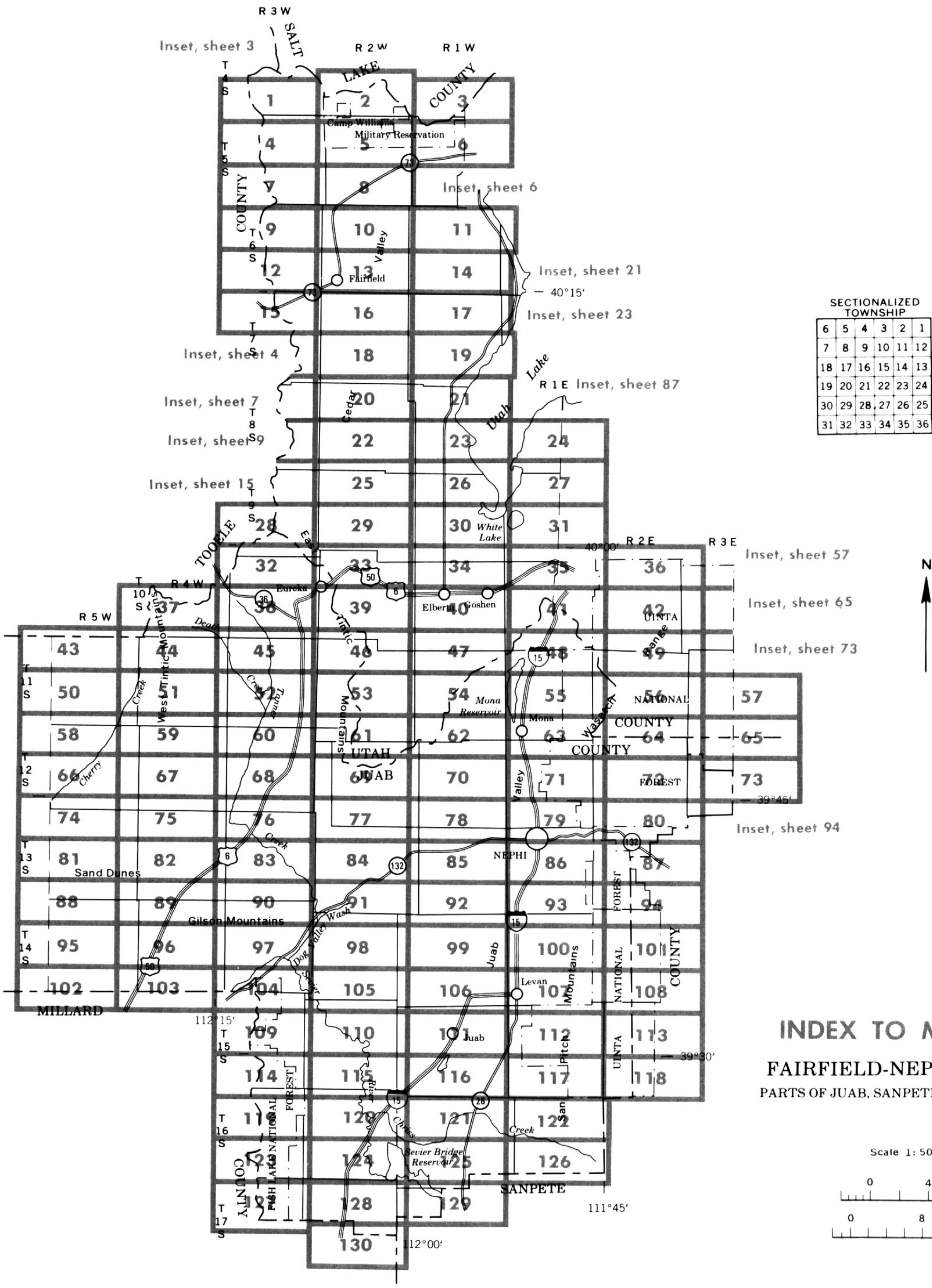
PARTS OF JUAB, SANPETE AND UTAH COUNTIES

Scale 1: 506,880

0 4 8 Miles

0 8 16 Km

Compiled 1982



INDEX TO MAP SHEETS

FAIRFIELD-NEPHI AREA, UTAH

PARTS OF JUAB, SANPETE AND UTAH COUNTIES

Scale 1: 506,880

0 4 8 Miles

0 8 16 Km

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
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FAIRFIELD-NEPHI AREA, UTAH

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SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is a capital if the mapping unit is broadly defined; otherwise it is a small letter. The third letter, always a capital A, B, C, D, E, or F, shows the slope. Slope letters are omitted from the symbol on broadly defined units, miscellaneous areas and on nearly level mapping units. A numeral 2 is used following the slope designation on those mapping units that are eroded. The letter P is used following the slope designation on those mapping units that are hummocky as a result of wind action.

SYMBOL	NAME
AaF	Agassiz very stony loam, 30 to 70 percent slopes
AbF	Agassiz-Rock outcrop complex, 30 to 70 percent slopes
AcE	Amtoft-Rock outcrop complex, 8 to 30 percent slopes
AcF	Amtoft-Rock outcrop complex, 30 to 70 percent slopes
AdE	Amtoft, moist-Rock outcrop complex, 8 to 30 percent slopes
AdF	Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes
AeD	Ant Flat loam, 8 to 15 percent slopes
AF	Aquic Ustifluvents, saline
AG	Argic Pachic Cryoborolls, rolling
AhA*	Ashdown loam, 0 to 2 percent slopes
AhB*	Ashdown loam, 2 to 4 percent slopes
AkA*	Ashdown loam, moist, 0 to 2 percent slopes
AkB*	Ashdown loam, moist, 2 to 4 percent slopes
AmE	Atepic shaly loam, 10 to 40 percent slopes
BA	Beaches
Bb	Benjamin silty clay loam
Bc	Benjamin silty clay loam, moderately saline-alkali
BdD	Bezzant gravelly loam, 6 to 30 percent slopes
BdF	Bezzant gravelly loam, 30 to 60 percent slopes
BeD	Bezzant gravelly loam, dry, 6 to 30 percent slopes
BeF	Bezzant gravelly loam, dry, 30 to 60 percent slopes
Bf*	Birdow loam
BgC	Borvant cobbly loam, 2 to 8 percent slopes
BgD	Borvant cobbly loam, 8 to 25 percent slopes
BhD	Borvant-Reywat complex, 8 to 30 percent slopes
BhF	Borvant-Reywat complex 30 to 60 percent slopes
BkE	Borvant-Sandall complex, 8 to 60 percent slopes
Bm	Bramwell silt loam
BnD	Broadhead Loam, 3 to 25 percent slopes
BnF	Broadhead loam, 25 to 70 percent slopes
CaB*	Calita loam, 2 to 4 percent slopes
CaC*	Calita loam, 4 to 8 percent slopes
CaD	Calita loam, 8 to 15 percent slopes
CbF	Calpac-Agassiz complex, 30 to 70 percent slopes
CcF	Calpac-Lundy complex, 30 to 70 percent slopes
CdE	Checkett, moist-Rock outcrop complex, 8 to 40 percent slopes
Ce*	Cheebe fine sandy loam
Cf	Cheebe silty clay loam
CG	Cumulic Haploxerolls, sloping
DaC*	Dagor loam, 2 to 8 percent slopes
DbD	Deer Creek cobbly loam, 6 to 25 percent slopes
DcD	Deer Creek-Borvant complex, 2 to 25 percent slopes
DdC	Donnardo stony loam, 2 to 8 percent slopes
DdE	Donnardo stony loam, 8 to 25 percent slopes
DdF	Donnardo stony loam, 25 to 40 percent slopes
DeF	Donnardo-Hiko Peak complex, 25 to 40 percent slopes
DfBC	Doyce loam, 2 to 4 percent slopes
DfC	Doyce loam, 4 to 8 percent slopes
DgC*	Doyce silt loam, loamy substratum, 2 to 4 percent slopes
DhD	Dry Creek cobbly loam, 4 to 15 percent slopes
DkD	Dry Creek-Reebok complex, 4 to 15 percent slopes
Dm	Duggins loam
DN	Dune land
FaB	Firmage gravelly loam, dry, 2 to 4 percent slopes
FbF	Flygare loam, 30 to 70 percent slopes
FcF	Flygare-Parkay-Rock outcrop complex, 30 to 70 percent slopes
FdF	Flygare-Starley association, very steep
FeD	Fontreen stony loam, 3 to 25 percent slopes
FeF	Fontreen stony loam, 25 to 60 percent slopes
FfD	Fontreen-Borvant complex, 2 to 25 percent slopes
FgB*	Freedom silt loam, 0 to 2 percent slopes
FgC*	Freedom silt loam, 2 to 5 percent slopes
FhB	Fridlo loam, 2 to 4 percent slopes
GaAP*	Genola fine sandy loam, hummocky
GbA*	Genola silt loam, 0 to 1 percent slopes
GbB*	Genola silt loam, 1 to 2 percent slopes
GbC*	Genola silt loam, 2 to 5 percent slopes
GcA*	Genola silt loam, moist, 0 to 1 percent slopes
GcB*	Genola silt loam, moist, 1 to2 percent slopes
GcC*	Genola silt loam, moist 2 to 5 percent slopes
GdDP	Goldrun loamy fine sand, 0 to 10 percent slopes, hummocky
GeD	Goldrun-Cheebe complex, 0 to 10 percent slopes
GfD	Goldrun-Medburn complex, 0 to 10 percent slopes
GgE	Goldrun-Rock outcrop complex, 0 to 10 percent slopes
HaF	Hamtah loam, 30 to 70 percent slopes
HbA	Hansel silt loam, 0 to 2 percent slopes
HbB	Hansel silt loam, 2 to 4 percent slopes
Hc	Harding silt loam
HdC	Hiko Peak stony sandy loam, 4 to 8 percent slopes
HdD	Hiko Peak stony sandy loam, 8 to 15 percent slopes
HdE	Hiko peak stony sandy loam, 15 to 25 percent slopes
HeC	Hillfield silt loam, 2 to 5 percent slopes
HFC	Hupp gravelly loam, 4 to 8 percent slopes
HfD	Hupp gravelly loam, 8 to 15 percent slopes
JaD	Jericho gravelly fine sandy loam, 4 to 15 percent slopes
Jba*	Juab loam, 0 to 2 percent slopes
JbB*	Juab loam, 2 to 4 percent slopes
JbC*	Juab loam, gravelly substratum, 2 to 4 percent slopes
JcC*	Juab loam, gravelly substratum, 4 to 8 percent slopes
JdC*	Juab complex, 4 to 8 percent slopes
JeD	Justesen loam, 4 to 15 percent slopes
KaB*	Keigley silt loam, dry, 0 to 2 percent slopes
Kb*	Kirkham silt loam
KcF	Kitchell-Rock outcrop complex, 30 to 70 percent slopes
LaA*	Linoyer very fine sandy loam, 0 to 1 percent slopes
LaB*	Linoyer very fine sandy loam, 1 to 2 percent slopes
LaC*	Linoyer very fine sandy loam, 2 to 5 percent slopes
LaD2	Linoyer very fine sandy loam, 5 to 10 percent slopes, eroded
LbE	Lizzant very cobbly loam, 8 to 30 percent slopes
LbF	Lizzant very cobbly loam, 30 to 60 percent slopes
LcF	Lizzant very cobbly loam, dry, 30 to 60 percent slopes
LdE	Lodar-Rock outcrop complex, 3 to 30 percent slopes
LdF	Lodar-Rock outcrop complex, 30 to 70 percent slopes
LeF	Lundy-Rock outcrop complex, 30 to 70 percent slopes
MaB	Manassa silt loam, 0 to 2 percent slopes
MbC2	Manassa silt loam, 2 to 5 percent slopes, eroded
McB	Manassa silt loam, moderately saline, 0 to 2 percent slopes
MdB	Manassa-Mellor silt loam, 0 to 2 percent slopes
MeC	Manila loam, 4 to 8 percent slopes
MeD	Manila loam, 8 to 15 percent slopes
MfA*	Medburn fine sandy loam, 0 to 2 percent slopes
MfB*	Medburn fine sandy loam, 2 to 4 percent slopes
Mg	Mellor silt loam
Mh	Mellor silt loam, wet
MkC	Modoc fine sandy loam, cool, 4 to 8 percent slopes
Mm*	Moroni silty clay loam
MnF	Mortenson silt loam, 40 to 70 percent slopes
MoC	Mountainville very stony sandy loam, 3 to 10 percent slopes
MpB	Mountainville gravelly loam, sandy substratum, 2 to 4 percent slopes
MrB	Mountainville, sandy substratum-Doyce complex, 2 to 4 percent slopes
MsD	Mower clay loam, 5 to 15 percent slopes
MtF	Mower-Rock outcrop complex, 30 to 50 percent slopes
MuB*	Musinia silt loam, 0 to 2 percent slopes
MuC*	Musinia silt loam, 2 to 5 percent slopes
MvB*	Musinia silty clay loam, moist, 0 to 2 percent slopes
MvC*	Musinia silty clay loam, moist, 2 to 5 percent slopes
NaB	Nephi silt loam
OaD	Orcky gravelly fine sandy loam, 4 to 15 percent slopes
OaE	Orcky gravelly fine sandy loam, 15 to 40 percent slopes
PA	Pachic Calcixerolls, very steep
PB	Pachic Haploxerolls, steep
PC	Pachic Cryoborolls, sloping
PD	Pachic Cryoborolls, north slopes
PeD	Parkay-Rock outcrop complex, 8 to 30 percent slopes
PeF	Parkay-Rock outcrop complex, 30 to 70 percent slopes
PfA*	Parleys loam, 0 to 2 percent slopes
PfB*	Parleys loam, 2 to 4 percent slopes
PfC*	Parleys loam, 4 to 8 percent slopes
PgC	Pharo very stony loam, 3 to 10 percent slopes
PhD	Pibler gravelly fine sandy loam, 4 to 15 percent slopes
PK	Pits-Dumps complex
PmD	Pober fine sandy loam, 4 to 15 percent slopes
PnD	Pober-Pibler complex, 4 to 15 percent slopes
Po	Provo Bay silt loam
Pp	Provo Bay-Cheebe complex
RaD	Reebok cobbly loam, 4 to 15 percent slopes
RaE	Reebok cobbly loam, 15 to 40 percent slopes
RbC	Renol stony fine sandy loam, 4 to 8 percent slopes
RcD	Renol-Reebok complex, 4 to 15 percent slopes
RdE	Reywat-Reebok-Rock outcrop complex, 10 to 30 percent slopes
ReE	Reywat-Rock outcrop complex, 10 to 30 percent slopes
ReF	Reywat-Rock outcrop complex, 30 to 60 percent slopes
RF	Rock outcrop
RgF	Rock outcrop-Amtoft complex, 30 to 70 percent slopes
RhF	Rock outcrop-Lodar complex, 30 to 70 percent slopes
RkF	Rock outcrop-Lundy complex, 30 to 70 percent slopes
RmF	Rock outcrop-Saxby complex, 30 to 70 percent slopes
RnF	Rock outcrop-Sheep Creek complex, 30 to 70 percent slopes
RpD	Rofiss gravelly clay loam, 4 to 15 percent slopes
Rr	Roshe Springs silt loam
RS	Rubble land
Sa	Saltair silty loam
SbF	Sandall very cobbly loam, 25 to 60 percent slopes
ScD	Sanpete gravelly fine sandy loam, 4 to 15 percent slopes
ScF	Sanpete gravelly fine sandy loam, 15 to 40 percent slopes
SdE	Saxby-Rock outcrop complex, 10 to 30 percent slopes
SdF	Saxby-Rock outcrop complex, 30 to 70 percent slopes
SeB	Saxby, moist-Rock outcrop complex, 10 to 30 percent slopes
SeF	Saxby, moist-Rock outcrop complex, 30 to 70 percent slopes
SfC	Shabliss very fine sandy loam, 2 to 5 percent slopes
SfD	Shabliss very fine sandy loam, 5 to 15 percent slopes
SfE	Shabliss very fine sandy loam, 15 to 30 percent slopes
SgC	Shabliss very fine sandy loam, moist, 2 to 5 percent slopes
ShE	Sheep Creek very cobbly loam, 10 to 30 percent slopes
ShF	Sheep Creek very cobbly loam, 30 to 70 percent slopes
SkF	Sheep Creek very cobbly loam, dry, 30 to 70 percent slopes
SmE	Sheep Creek-Flygare complex, 8 to 30 percent slopes
SN	Slickens
SoD	Spager gravelly loam, 4 to 15 percent slopes
SpE	Starley-Rock outcrop complex, 8 to 30 percent slopes
SpF	Starley-Rock outcrop complex, 30 to 70 percent slopes
SrE	Sumine very cobbly loam, 10 to 30 percent slopes
SsE	Sumine-Reywat-Rock outcrop complex, 10 to 30 percent slopes
SsF	Sumine-Reywat-Rock outcrop complex, 30 to 60 percent slopes
TaA*	Taylorsville silt loam, 0 to 2 percent slopes
TaB*	Taylorsville silt loam, 2 to 4 percent slopes
TaC	Taylorsville silt loam, 4 to 8 percent slopes
TbB	Thiokol silt loam, dry, 0 to 2 percent slopes
TcC*	Thiokol-Linoyer complex, 0 to 5 percent slopes
TdB	Truesdale fine sandy loam, 2 to 4 percent slopes
TE	Typic Cryoborolls, moderately sloping
TF	Typic Haploborolls, steep
WaB*	Wales loam, 2 to 4 percent slopes
WbB*	Wales loam, dry, 2 to 4 percent slopes
WcF	Wallsburg-Rock outcrop complex, 25 to 70 percent slopes
WdE	Wallsburg-Yeates Hollow complex, 25 to 40 percent slopes
WdF	Wallsburg-Yeates Hollow complex, 40 to 70 percent slopes
W	Water
We	Woodrow loamy fine sand
WfA*	Woodrow silt loam, 0 to 1 percent slopes
WfB*	Woodrow silt loam, 1 to 2 percent slopes
WfC*	Woodrow silt loam, 2 to 5 percent slopes
XA	Xerertic Torrior thents, steep
XB	Xeric Torriorthents-Rock outcrop complex, steep
YaC	Yeates Hollow stony loam, 6 to 10 percent slopes
YaD	Yeates Hollow very stony loam, 10 to 25 percent slopes
YaD	Yeates Hollow very stony loam, 10 to 25 percent slopes
YaE	Yeates Hollow very stony loam, 25 to 40 percent slopes
YbF	Yeates Hollow very stony loam, 40 to 70 percent north slopes

* Indicates mapping units that are considered prime farm land in Utah. These soils are all irrigated

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label) — Hedley Airstrip

- Small airport, airfield, park, oilfield, cemetery, or flood pool — FLOOD POOL LINE

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate — 21
- Federal — 173
- State — 28
- County, farm or ranch — 1283

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small — water

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) — CANAL
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — water, w
- Intermittent — int, i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — CnB, WaC2

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown)

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION AT 4,690 FEET

[Recorded in the period 1941-75 at Elberta, Utah]

Month	Temperature			Precipitation Totals			
	Average daily maximum	Average daily minimum	Average daily	Average	Greatest Daily	Snow	
						Average	Maximum Monthly
	°F	°F	°F	In	In	In	In
January	37.6	15.9	26.8	0.85	0.83	8.1	33.0
February	43.6	21.4	32.4	0.92	2.14	5.5	18.5
March	53.3	27.1	40.2	1.02	0.93	4.4	13.0
April	63.5	34.0	48.8	1.06	1.21	1.4	14.0
May	73.7	41.5	57.6	1.05	1.89	0.1	1.5
June	84.0	49.3	66.7	0.67	1.38	0.0	0.0
July	91.9	57.6	74.8	0.75	1.30	0.0	0.0
August	89.6	56.1	72.9	0.86	1.97	0.0	0.0
September	80.5	45.9	63.2	0.65	1.00	0.0	0.0
October	67.0	35.3	51.2	0.99	1.27	0.4	6.4
November	51.2	25.4	38.3	0.81	1.30	2.7	12.5
December	39.6	18.2	28.9	0.87	1.48	6.3	27.5
Annual	64.6	35.6	50.2	10.50	2.14	28.9	33.0

TABLE 2.--TEMPERATURE AND PRECIPITATION AT 5,300 FEET

[Recorded in the period 1890-1975 at Levan, Utah]

Month	Temperature: Average daily maximum	Temperature: Average daily minimum	Temperature: Average daily	Precipitation Totals: Average	Precipitation Totals: Greatest Daily	Snow: Average	Snow: Maximum Monthly
	°F	°F	°F	In	In	In	In
January----	37.1	13.8	25.4	1.32	2.00	13.6	46.6
February---	42.4	19.4	30.6	1.36	1.34	11.5	42.5
March------	51.4	25.6	38.5	1.73	1.70	12.8	50.5
April------	61.6	32.4	47.0	1.63	2.85	5.4	35.0
May--------	70.8	39.7	55.4	1.52	1.72	1.5	22.0
June-------	81.1	47.6	64.4	0.72	2.19	T	T
July-------	89.1	55.5	72.4	0.76	1.40	0.0	0.0
August-----	87.0	54.1	70.6	0.96	1.71	T	T
September--	78.2	45.1	61.7	1.03	2.12	0.3	13.5
October----	65.3	34.8	50.1	1.27	1.37	2.1	26.0
November---	50.7	24.5	37.6	1.09	1.65	6.7	26.0
December---	38.4	16.0	27.5	1.44	1.05	13.3	36.0
Annual---	62.7	34.0	48.4	14.83	2.85	67.2	50.5

TABLE 3.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1941-1975 at Elberta, Utah]

Probability	Temperature		
	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than----	April 2	May 20	June 2
2 years in 10 later than---	April 24	May 12	May 26
5 years in 10 later than---	April 12	May 1	May 3
First freezing temperature in fall:			
1 year in 10 earlier than--	October 15	September 30	September 20
2 years in 10 earlier than-	October 22	October 5	September 24
5 years in 10 earlier than-	October 30	October 12	October 1

[Recorded in the period 1970-1975 at Levan, Utah]

Probability	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than----	May 5	May 5	June 6
2 years in 10 later than---	April 24	May 14	June 2
5 years in 10 later than---	April 14	May 2	May 17
First freezing temperature in fall:			
1 year in 10 earlier than--	October 15	September 30	September 18
2 years in 10 earlier than-	October 19	October 3	September 23
5 years in 10 earlier than-	October 28	October 12	October 1

TABLE 4.--ESTIMATED PAN EVAPORATION

Month	Elberta Station	Nephi Station	Levan Station
	In	In	In
May	6.3	10.3	9.8
June	7.2	12.0	11.4
July	8.3	12.8	12.1
August	7.5	10.3	9.8
September	5.1	7.9	7.5
October	2.9	5.1	4.8
Seasonal evaporation	37.3	58.4	55.4

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Juab County	Utah County	Sanpete County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Acres	Pct
AaF	Agassiz very stony loam, 30 to 70 percent slopes	553	1,504	0	2,057	0.1
AbF	Agassiz-Rock outcrop complex, 30 to 70 percent slopes	11,597	7,978	0	19,575	1.4
AcE	Amtoft-Rock outcrop complex, 8 to 30 percent slopes	1,935	1,589	0	3,524	0.3
AcF	Amtoft-Rock outcrop complex, 30 to 70 percent slopes	7,815	17,872	0	25,687	1.9
AdE	Amtoft, moist-Rock outcrop complex, 8 to 30 percent slopes	1,963	0	0	1,963	0.1
AdF	Amtoft, moist-Rock outcrop complex, 30 to 70 percent slopes	11,816	15,827	0	27,643	2.0
AeD	Ant Flat loam, 8 to 15 percent slopes	1,360	0	0	1,360	0.1
AF	Aquic Ustifluvents, saline	2,085	1,270	0	3,355	0.2
AG	Argic Pachic Cryoborolls, rolling	530	4,083	0	4,613	0.3
AhA	Ashdown loam, 0 to 2 percent slopes	1,347	0	0	1,347	0.1
AhB	Ashdown loam, 2 to 4 percent slopes	1,648	0	0	1,648	0.1
AkA	Ashdown loam, moist, 0 to 2 percent slopes	1,110	0	0	1,110	0.1
AkB	Ashdown loam, moist, 2 to 4 percent slopes	4,144	0	0	4,144	0.3
AmE	Atepic shaly loam, 10 to 40 percent slopes	1,116	1,019	0	2,135	0.2
BA	Beaches	265	882	0	1,147	0.1
Bb	Benjamin silty clay loam	482	3,172	0	3,654	0.3
Bc	Benjamin silty clay loam, moderately saline-alkali	2,584	351	0	2,935	0.2
BdD	Bezzant gravelly loam, 6 to 30 percent slopes	330	356	0	686	*
BdF	Bezzant gravelly loam, 30 to 60 percent slopes	9,460	10,620	157	20,237	1.5
BeD	Bezzant gravelly loam, dry, 6 to 30 percent slopes	1,511	610	0	2,121	0.2
BeF	Bezzant gravelly loam, dry, 30 to 60 percent slopes	1,251	0	0	1,251	0.1
Bf	Birdow loam	453	1,700	0	2,153	0.2
BgC	Borvant cobbly loam, 2 to 8 percent slopes	28,271	7,072	0	35,343	2.6
BgD	Borvant cobbly loam, 8 to 25 percent slopes	27,208	8,397	0	35,605	2.6
BhD	Borvant-Reywat complex, 8 to 30 percent slopes	5,058	2,429	0	7,487	0.5
BhF	Borvant-Reywat complex, 30 to 60 percent slopes	3,301	1,828	0	5,129	0.4
BkE	Borvant-Sandall complex, 8 to 60 percent slopes	2,597	0	0	2,597	0.2
Bm	Bramwell silt loam	1,164	2,285	0	3,449	0.2
BnD	Broadhead loam, 3 to 25 percent slopes	231	458	0	689	*
BnF	Broadhead loam, 25 to 70 percent slopes	246	0	0	246	*
CaB	Calita loam, 2 to 4 percent slopes	1,283	134	0	1,417	0.1
CaC	Calita loam, 4 to 8 percent slopes	3,946	336	0	4,282	0.3
CaD	Calita loam, 8 to 15 percent slopes	28	338	0	366	*
CbF	Calpac-Agassiz complex, 30 to 70 percent slopes	0	2,808	0	2,808	0.2
CcF	Calpac-Lundy complex, 30 to 70 percent slopes	0	2,331	0	2,331	0.2
CdE	Checkett, moist-Rock outcrop complex, 8 to 40 percent slopes	0	1,754	0	1,754	0.1
Ce	Cheebe fine sandy loam	0	2,052	0	2,052	0.1
Cf	Cheebe silty clay loam	0	9,731	0	9,731	0.7
CG	Cumulic Haploxerolls, sloping	2,290	887	0	3,177	0.2
DaC	Dagor loam, 2 to 8 percent slopes	2,812	568	0	3,380	0.2
DbD	Deer Creek cobbly loam, 6 to 25 percent slopes	873	2,614	0	3,487	0.3
DcD	Deer Creek-Borvant complex, 2 to 25 percent slopes	493	1,620	0	2,113	0.2
DdC	Donnardo stony loam, 2 to 8 percent slopes	18,482	19,743	0	38,225	2.8
DdE	Donnardo stony loam, 8 to 25 percent slopes	3,432	1,406	0	4,838	0.3
DdF	Donnardo stony loam, 25 to 40 percent slopes	58	1,432	0	1,490	0.1
DeF	Donnardo-Hiko Peak complex, 25 to 40 percent slopes	2,276	556	0	2,832	0.2
DfB	Doyce loam, 2 to 4 percent slopes	3,847	933	0	4,780	0.3
DfC	Doyce loam, 4 to 8 percent slopes	2,386	68	0	2,454	0.2
DgC	Doyce silt loam, loamy substratum, 2 to 4 percent slopes	4,060	0	0	4,060	0.3
DhD	Dry Creek cobbly loam, 4 to 15 percent slopes	210	2,134	0	2,344	0.2
DkD	Dry Creek-Reebok complex, 4 to 15 percent slopes	0	828	0	828	0.1
Dm	Duggins loam	100	1,117	0	1,217	0.1
DN	Dune land	19,437	0	0	19,437	1.4
FaB	Firmage gravelly loam, dry, 2 to 4 percent slopes	534	2,327	0	2,861	0.2
FbF	Flygare loam, 30 to 70 percent slopes	2,280	3,930	1,800	8,010	0.6
FcF	Flygare-Parkay-Rock outcrop complex, 30 to 70 percent slopes	540	1,952	100	2,592	0.2
FdF	Flygare-Starley association, very steep	1,470	6,837	0	8,307	0.6
FeD	Fontreen stony loam, 3 to 25 percent slopes	1,799	0	0	1,799	0.1
FeF	Fontreen stony loam, 25 to 60 percent slopes	737	476	0	1,213	0.1
FfD	Fontreen-Borvant complex, 2 to 25 percent slopes	7,076	0	0	7,076	0.5
FgB	Freedom silt loam, 0 to 2 percent slopes	273	533	0	806	0.1
FgC	Freedom silt loam, 2 to 5 percent slopes	1,191	0	0	1,191	0.1
FhB	Fridlo loam, 2 to 4 percent slopes	533	0	0	533	*
GaBP	Genola fine sandy loam, hummocky, 1 to 2 percent slopes	125	5,182	0	5,307	0.4

See footnote at end of table.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Juab County	Utah County	Sanpete County	Total-- Area	Extent
		Acres	Acres	Acres	Acres	Pct
GbA	Genola silt loam, 0 to 1 percent slopes	4,193	9,688	0	13,881	1.0
GbB	Genola silt loam, 1 to 2 percent slopes	13,072	6,645	0	19,717	1.4
GbC	Genola silt loam, 2 to 5 percent slopes	5,327	5,295	0	10,622	0.8
GcA	Genola silt loam, moist, 0 to 1 percent slopes	1,205	0	0	1,205	0.1
GcB	Genola silt loam, moist, 1 to 2 percent slopes	926	0	0	926	0.1
GcC	Genola silt loam, moist, 2 to 5 percent slopes	3,350	56	0	3,406	0.2
GdDP	Goldrun loamy fine sand, hummocky, 0 to 10 percent slopes	43,735	1,246	0	44,981	3.3
GeD	Goldrun-Cheebe complex, 0 to 10 percent slopes	0	3,421	0	3,421	0.2
GfD	Goldrun-Medburn complex, 0 to 10 percent slopes	57	3,392	0	3,449	0.2
GgD	Goldrun-Rock outcrop complex, 0 to 10 percent slopes	3,933	0	0	3,933	0.3
HaF	Hamtah loam, 30 to 70 percent slopes	7,729	1,954	650	10,333	0.7
HbA	Hansel silt loam, 0 to 2 percent slopes	644	0	0	644	*
HbB	Hansel silt loam, 2 to 4 percent slopes	3,255	0	0	3,255	0.2
Hc	Harding silt loam	1,958	3,998	0	5,956	0.4
HdC	Hiko Peak stony sandy loam, 4 to 8 percent slopes	12,361	15,040	0	27,401	2.0
HdD	Hiko Peak stony sandy loam, 8 to 15 percent slopes	1,813	2,378	0	4,191	0.3
HdE	Hiko Peak stony sandy loam, 15 to 25 percent slopes	3,382	330	0	3,712	0.3
HeC	Hillfield silt loam, 2 to 5 percent slopes	0	696	0	696	0.1
HfC	Hupp gravelly loam, 4 to 8 percent slopes	1,188	293	0	1,481	0.1
HfD	Hupp gravelly loam, 8 to 15 percent slopes	484	412	0	896	0.1
JaD	Jericho gravelly fine sandy loam, 4 to 15 percent slopes	33,176	1,249	0	34,425	2.5
JbA	Juab loam, 0 to 2 percent slopes	13,566	0	0	13,566	1.0
JbB	Juab loam, 2 to 4 percent slopes	15,993	2,611	0	18,604	1.3
JbC	Juab loam, 4 to 8 percent slopes	3,769	2,042	0	5,811	0.4
JcB	Juab loam, gravelly substratum, 2 to 4 percent slopes	2,071	289	0	2,360	0.2
JcC	Juab loam, gravelly substratum, 4 to 8 percent slopes	1,642	142	0	1,784	0.1
JdC	Juab complex, 4 to 8 percent slopes	2,079	0	0	2,079	0.2
JeD	Justesen loam, 4 to 15 percent slopes	2,709	61	0	2,770	0.2
KaB	Keigley silt loam, dry, 0 to 2 percent slopes	494	1,046	0	1,540	0.1
Kb	Kirkham silt loam	2,374	0	0	2,374	0.2
KcF	Kitchell-Rock outcrop complex, 30 to 70 percent slopes	2,040	1,037	590	3,667	0.3
LaA	Linoyer very fine sandy loam, 0 to 1 percent slopes	1,696	1,706	0	3,402	0.2
LaB	Linoyer very fine sandy loam, 1 to 2 percent slopes	2,771	0	0	2,771	0.2
LaC	Linoyer very fine sandy loam, 2 to 5 percent slopes	14,879	19,487	0	34,366	2.5
LaD2	Linoyer very fine sandy loam, 5 to 10 percent slopes eroded	3,490	827	0	4,317	0.3
LbE	Lizzant very cobbly loam, 8 to 30 percent slopes	2,260	100	0	2,360	0.2
LbF	Lizzant very cobbly loam, 30 to 60 percent slopes	2,880	152	0	3,032	0.2
LcF	Lizzant very cobbly loam, dry, 30 to 60 percent slopes	1,792	0	0	1,792	0.1
LdE	Lodar-Rock outcrop complex, 3 to 30 percent slopes	2,738	592	0	3,330	0.2
LdF	Lodar-Rock outcrop complex, 30 to 70 percent slopes	37,752	17,140	0	54,892	4.0
LeF	Lundy-Rock outcrop complex, 30 to 70 percent slopes	21,879	12,783	600	35,262	2.5
MaB	Manassa silt loams, 0 to 2 percent slopes	2,174	426	0	2,600	0.2
MbC2	Manassa silt loam, 2 to 5 percent slopes, eroded	990	1,250	0	2,240	0.2
McB	Manassa silt loam, moderately saline, 0 to 2 percent slopes	1,908	53	0	1,961	0.1
MdB	Manassa-Mellor silt loams, 0 to 2 percent slopes	1,333	4,770	0	6,103	0.4
MeC	Manila loam, 4 to 8 percent slopes	1,585	0	0	1,585	0.1
MeD	Manila loam, 8 to 15 percent slopes	1,045	260	0	1,305	0.1
MfA	Medburn fine sandy loam, 0 to 2 percent slopes	518	2,057	0	2,575	0.2
MfB	Medburn fine sandy loam, 2 to 4 percent slopes	8,866	13,181	0	22,047	1.6
Mg	Mellor silt loam	1,668	3,276	0	4,944	0.4
Mh	Mellor silt loam, wet	2,511	0	0	2,511	0.2
MkC	Modoc fine sandy loam, cool, 4 to 8 percent slopes	2,818	0	0	2,818	0.2
Mm	Moroni silty clay loam	1,815	138	0	1,953	0.1
MnF	Mortenson silt loam, 40 to 70 percent slopes	2,680	0	1,052	3,732	0.3
MoC	Mountainville very stony sandy loam, 3 to 10 percent slopes	5,148	240	0	5,388	0.4
MpB	Mountainville gravelly loam, sandy substratum, 2 to 4 percent slopes	223	2,192	0	2,415	0.2
MrB	Mountainville, sandy substratum-Doyce complex, 2 to 4 percent slopes	258	2,693	0	2,951	0.2
MsD	Mower clay loam, 5 to 15 percent slopes	3,212	0	2,000	5,212	0.4
MtF	Mower-Rock outcrop complex, 30 to 50 percent slopes	1,707	0	1,800	3,507	0.3
MuB	Musinia silt loam, 0 to 2 percent slopes	1,430	766	0	2,196	0.2
MuC	Musinia silt loam, 2 to 5 percent slopes	0	741	0	741	0.1
MvB	Musinia silty clay loam, moist, 0 to 2 percent slopes	1,113	249	0	1,362	0.1
MvC	Musinia silty clay loam, moist, 2 to 5 percent slopes	1,113	274	0	1,387	0.1
NaB	Nephi silt loam	9,520	0	0	9,520	0.7

See footnote at end of table.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Juab County	Utah County	Sanpete County	Total-- Area	Extent
		Acres	Acres	Acres	Acres	Pct
OaD	Orcky gravelly fine sandy loam, 4 to 15 percent slopes	1,222	4,499	0	5,721	0.4
OaE	Orcky gravelly fine sandy loam, 15 to 40 percent slopes	3,107	1,309	0	4,416	0.3
PA	Pachic Calcixerolls, very steep	485	1,100	0	1,585	0.1
PB	Pachic Haploxerolls, steep	530	2,550	250	3,330	0.2
PC	Pachic Cryoborolls, sloping	60	450	0	510	*
PD	Pachic Cryoborolls, north slopes	8,721	21,233	850	30,804	2.2
PeD	Parkay-Rock outcrop complex, 8 to 30 percent slopes	0	0	950	950	0.1
PeF	Parkay-Rock outcrop complex, 30 to 70 percent slopes	6,160	6,152	680	12,992	0.9
PfA	Parleys loam, 0 to 2 percent slopes	0	262	0	262	*
PfB	Parleys loam, 2 to 4 percent slopes	588	1,469	0	2,057	0.1
PfC	Parleys loam, 4 to 8 percent slopes	0	396	0	396	*
PgC	Pharo very stony loam, 3 to 10 percent slopes	3,309	0	0	3,309	0.2
PhD	Pibler gravelly fine sandy loam, 4 to 15 percent slopes	2,439	286	0	2,725	0.2
PK	Pits-Dumps complex	657	1,542	0	2,199	0.2
PmD	Pober fine sandy loam, 4 to 15 percent slopes	2,212	0	0	2,212	0.2
PnD	Pober-Pibler complex, 4 to 15 percent slopes	3,778	0	0	3,778	0.3
Po	Provo Bay silt loam	942	1,863	0	2,805	0.2
Pp	Provo Bay-Cheebe complex	0	2,182	0	2,182	0.2
RaD	Reebok cobbly loam, 4 to 15 percent slopes	1,169	519	0	1,688	0.1
RaE	Reebok cobbly loam, 15 to 40 percent slopes	1,297	460	0	1,757	0.1
RbC	Renol stony fine sandy loam, 4 to 8 percent slopes	1,146	338	0	1,484	0.1
RcD	Renol-Reebok complex, 4 to 15 percent slopes	603	788	0	1,391	0.1
RdE	Reywat-Reebok-Rock outcrop complex, 10 to 30 percent slopes	2,268	881	0	3,149	0.2
ReE	Reywat-Rock outcrop complex, 10 to 30 percent slopes	3,944	3,073	0	7,017	0.5
ReF	Reywat-Rock outcrop complex, 30 to 60 percent slopes	10,083	2,019	0	12,102	0.9
RF	Rock outcrop	4,534	3,947	1,040	9,521	0.7
RgF	Rock outcrop-Amtoft complex, 30 to 70 percent slopes	1,710	1,195	0	2,905	0.2
RhF	Rock outcrop-Lodar complex, 30 to 70 percent slopes	6,791	2,553	0	9,344	0.7
RkF	Rock outcrop-Lundy complex, 30 to 70 percent slopes	1,331	3,042	0	4,373	0.3
RmF	Rock outcrop-Saxby complex, 30 to 70 percent slopes	876	1,411	0	2,287	0.2
RnF	Rock outcrop-Sheep Creek complex, 30 to 70 percent slopes	7,950	0	800	8,750	0.6
RoF	Rock outcrop-Wallsburg complex, 30 to 70 percent slopes	1,530	1,043	0	2,573	0.2
RpD	Rofiss gravelly clay loam, 4 to 15 percent slopes	3,403	0	0	3,403	0.2
Rr	Roshe Springs silt loam	3,741	1,327	0	5,068	0.4
RS	Rubble land	650	660	0	1,310	0.1
Sa	Saltair silt loam	941	5,739	0	6,680	0.5
SbF	Sandall very cobbly loam, 25 to 60 percent slopes	4,697	315	0	5,012	0.4
ScD	Sanpete gravelly fine sandy loam, 4 to 15 percent slopes	4,468	2,023	0	6,491	0.5
ScF	Sanpete gravelly fine sandy loam, 15 to 40 percent slopes	2,045	807	0	2,852	0.2
SdE	Saxby-Rock outcrop complex, 10 to 30 percent slopes	8,171	2,661	0	10,832	0.8
SdF	Saxby-Rock outcrop complex, 30 to 70 percent slopes	3,455	222	0	3,677	0.3
SeB	Saxby,moist-Rock outcrop complex, 10 to 30 percent slopes	9,283	896	0	10,179	0.7
SeF	Saxby, moist-Rock outcrop complex, 30 to 70 percent slopes	8,382	7,463	0	15,845	1.1
SfC	Shabliss very fine sandy loam, 2 to 5 percent slopes	21,501	2,538	0	24,039	1.7
SfD	Shabliss very fine sandy loam, 5 to 15 percent slopes	1,031	0	0	1,031	0.1
SfE	Shabliss very fine sandy loam, 15 to 30 percent slopes	2,583	0	0	2,583	0.2
SgC	Shabliss very fine sandy loam, moist, 2 to 5 percent slopes	2,982	0	0	2,982	0.2
ShE	Sheep Creek very cobbly loam, 10 to 30 percent slopes	6,617	0	0	6,617	0.5
ShF	Sheep Creek very cobbly loam, 30 to 70 percent slopes	7,371	1,380	2,232	10,983	0.8
SkF	Sheep Creek very cobbly loam, dry, 30 to 70 percent slopes	0	3,150	0	3,150	0.2
SmE	Sheep Creek-Flygare complex, 8 to 30 percent slopes	2,250	0	1,525	3,775	0.3
SN	Slickens	0	389	0	389	*
SoD	Spager gravelly loam, 4 to 15 percent slopes	21,917	4,695	0	26,612	1.9
SpE	Starley-Rock outcrop complex, 8 to 30 percent slopes	0	0	390	390	*
SpF	Starley-Rock outcrop complex, 30 to 70 percent slopes	230	1,807	0	2,037	0.1
SrE	Sumine very cobbly loam, 10 to 30 percent slopes	1,323	235	0	1,558	0.1
SsE	Sumine-Reywat-Rock outcrop complex, 10 to 30 percent slopes	22,776	5,611	0	28,387	2.1

See footnote at end of table.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Juab County	Utah County	Sanpete County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Acres	Pct
SsF	Sumine-Reywat-Rock outcrop complex, 30 to 60 percent slopes	4,280	7,952	0	12,232	0.9
TaA	Taylorsville silt loam, 0 to 2 percent slopes	0	1,041	0	1,041	0.1
TaB	Taylorsville silt loam, 2 to 4 percent slopes	0	712	0	712	0.1
TaC	Taylorsville silt loam, 4 to 8 percent slopes	0	353	0	353	*
TbB	Thiokol silt loam, dry, 0 to 2 percent slopes	130	4,427	0	4,557	0.3
TcC	Thiokol-Linoyer complex, 0 to 5 percent slopes	0	1,773	0	1,773	0.1
TdB	Truesdale fine sandy loam, 2 to 4 percent slopes	11,964	0	0	11,964	0.9
TE	Typic Cryoborolls, moderately sloping	170	580	0	750	0.1
TF	Typic Haploborolls, steep	6,449	4,010	1,173	11,632	0.8
WaB	Wales loam, 2 to 4 percent slopes	8,615	1,799	0	10,414	0.8
WbB	Wales loam, dry, 2 to 4 percent slopes	10,921	1,080	0	12,001	0.9
WcF	Wallsburg-Rock outcrop complex, 25 to 70 percent slopes	7,482	5,902	0	13,384	1.0
WdE	Wallsburg-Yeates Hollow complex, 25 to 40 percent slopes	902	2,128	0	3,030	0.2
WdF	Wallsburg-Yeates Hollow complex, 40 to 70 percent slopes	7,180	2,774	0	9,954	0.7
WeB	Woodrow loamy fine sand, 1 to 2 percent slopes	1,800	1,776	0	3,576	0.3
WfA	Woodrow silt loam, 0 to 1 percent slopes	1,764	5,245	0	7,009	0.5
WfB	Woodrow silt loam, 1 to 2 percent slopes	1,366	1,919	0	3,285	0.2
WfC	Woodrow silt loam, 2 to 5 percent slopes	1,816	483	0	2,299	0.2
XA	Xerertic Torriorthents, steep	8,172	256	0	8,428	0.6
XB	Xeric Torriorthents-Rock outcrop complex, steep	29,106	121	0	29,227	2.1
YaC	Yeates Hollow very stony loam, 6 to 10 percent slopes	1,425	100	0	1,525	0.1
YaD	Yeates Hollow very stony loam, 10 to 25 percent slopes	2,430	1,133	0	3,563	0.3
YaE	Yeates Hollow very stony loam, 25 to 40 percent slopes	4,823	7,287	500	12,610	0.9
YbF	Yeates Hollow very stony loam, 40 to 70 percent north slopes	2,374	335	0	2,709	0.2
	Water	4,054	1,116	0	5,170	0.4
	Total	886,781	477,385	19,139	1,383,305	100.0

* Less than 0.1 percent.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields in the N columns are for nonirrigated soils; those in the I columns are for irrigated soils. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Alfalfa hay		Winter wheat		Spring wheat		Corn silage		Barley		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
	Ton	Ton	Bu	Bu	Bu	Bu	Ton	Ton	Bu	Bu	AUM*	AUM*
AeD Ant Flat	---	---	30	---	---	---	---	---	---	---	---	---
AhA, AhB Ashdown	---	6	---	---	---	80	---	25	---	120	---	12
AkA, AkB Ashdown	---	6	20	---	---	80	---	25	---	120	1	12
Bb Benjamin	---	5	---	---	---	70	---	15	---	90	2	10
Bf Birdow	---	---	22	100	---	---	---	25	---	120	1	12
Bm Bramwell	---	2	---	---	---	---	---	---	---	---	4	8
CaB Calita	---	---	17	100	---	55	---	25	---	75	1	11
CaC Calita	---	---	17	90	---	40	---	20	---	65	1	10
CaD Calita	---	---	18	---	---	---	---	---	---	---	1	---
DaC Dagor	---	---	17	---	---	---	---	---	---	---	---	---
DfB Doyce	1.0	5.5	17	120	---	50	---	20	75	---	1	11
DfC Doyce	1.0	5.0	17	110	---	45	---	---	60	---	1	9
DgC Doyce	---	6	17	---	---	50	---	---	60	---	1	12
Dm Duggins	---	5	---	---	---	---	---	20	---	90	0.5	8
FaB Firmage	---	5.5	---	---	---	---	---	---	---	110	---	8
FgB, FgC Freedom	---	5.5	---	---	---	---	---	20	---	110	---	---
GbA Genola	---	6	---	---	---	---	---	25	---	120	1	12
GbB Genola	---	6	---	---	---	---	---	25	---	120	1	12
GbC Genola	---	6	---	---	---	---	---	25	---	120	1	12
GcA Genola	---	6	20	---	---	---	---	25	---	120	---	12
GcB Genola	---	6	20	---	---	---	---	25	---	120	---	12

See footnote at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Alfalfa hay		Winter wheat		Spring wheat		Corn silage		Barley		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
	Ton	Ton	Bu	Bu	Bu	Bu	Ton	Ton	Bu	Bu	AUM*	AUM*
GcC Genola	---	6	20	---	---	---	---	25	---	120	---	12
HbA, HbB Hansel	---	---	20	---	---	---	---	---	---	---	---	---
HeC Hillfield	---	5.5	---	---	---	---	---	---	---	---	---	---
HfC, HfD Hupp	---	---	20	---	---	---	---	---	---	---	---	---
JbA Juab	---	6	17	---	---	70	---	---	---	120	---	12
JbB Juab	---	6	17	---	---	70	---	---	---	120	---	12
JbC Juab	---	6	17	---	---	70	---	---	---	120	---	12
JcB Juab	---	6	---	---	---	---	---	---	---	120	1	12
JcC Juab	---	5.5	---	---	---	---	---	---	---	110	1	11
JdC Juab-Juab,gravelly substratum	---	5.5	---	---	---	70	---	---	---	110	---	11
JeD Justesen	---	---	17	---	---	---	---	---	---	---	1	---
KaB Keigley	---	6.0	---	---	---	100	---	25	---	120	1	12
Kb Kirkham	---	5.0	---	---	---	80	---	20	---	100	---	11
LaA Linoyer	---	6.0	---	---	---	70	---	25	---	100	---	12
LaB Linoyer	---	6.0	---	---	---	70	---	25	---	100	---	12
LaC Linoyer	---	5.5	---	---	---	60	---	---	---	80	---	11
LaD2 Linoyer	---	5.5	---	---	---	90	---	20	---	110	1	11
MeC Manila	---	---	30	---	---	---	---	---	---	---	---	---
MeD Manila	---	---	30	---	---	---	---	---	---	---	---	---
MfA Medburn	---	5.5	---	---	---	70	---	---	---	110	0.4	11
MfB Medburn	---	5.5	---	---	---	70	---	---	---	110	0.4	11
MkC Modoc	---	4	17	---	---	50	---	---	---	100	0.8	10

See footnote at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Alfalfa hay		Winter wheat		Spring wheat		Corn silage		Barley		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
	Ton	Ton	Bu	Bu	Bu	Bu	Ton	Ton	Bu	Bu	AUM*	AUM*
Mm----------------------- Moroni	---	---	17	---	---	45	---	---	---	75	---	10
MuB, MuC, MvB, MvC--------- Musinia	---	6.0	---	---	---	70	---	28	---	100	---	10
NaB----------------------- Nephi	1.5	6	---	---	---	---	---	---	---	---	---	---
PfA----------------------- Parleys	---	---	30	---	---	---	---	---	---	---	---	---
PfB----------------------- Parleys	---	---	30	---	---	---	---	---	---	---	---	---
PfC----------------------- Parleys	---	---	26	---	---	---	---	---	---	---	---	---
RpD----------------------- Rofiss	---	---	---	---	---	---	---	---	---	---	1	8
Rr------------------------ Roshe Springs	---	---	---	---	---	---	---	---	---	---	---	9.0
TaA----------------------- Taylorsville	---	5.5	14	---	---	80	---	22	---	90	---	---
TaB----------------------- Taylorsville	---	5.0	14	---	---	70	---	---	---	80	---	---
TaC----------------------- Taylorsville	---	---	14	---	---	---	---	---	---	---	---	---
TbB----------------------- Thiokol	---	5.0	---	---	---	70	---	---	---	80	---	---
WaB, WbB------------------ Wales	---	50	---	---	---	70	---	20	---	80	---	---
WeB, WfA, WfB------------- Woodrow	---	6.0	---	---	---	75	---	22	---	100	---	12
WfC----------------------- Woodrow	---	6.0	---	---	---	70	---	---	---	90	---	9

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

[All soils are assigned to nonirrigated capability subclasses. Only potentially irrigable soils are assigned to irrigated subclasses. Miscellaneous areas are excluded. Dashes indicate no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I (Nonirrigated):					
Juab County	---	---	---	---	---
Sanpete County	---	---	---	---	---
Utah County	---	---	---	---	---
I (Irrigated):					
Juab County	---	---	---	---	---
Sanpete County	262	---	---	---	---
Utah County	---	---	---	---	---
II (Nonirrigated):					
Juab County	1,696	1,696	---	---	---
Sanpete County	1,706	1,706	---	---	---
Utah County	---	---	---	---	---
II (Irrigated):					
Juab County	91,025	59,506	2,374	---	29,145
Sanpete County	65,773	34,804	---	---	30,969
Utah County	---	---	---	---	---
III (Nonirrigated):					
Juab County	14,505	14,505	---	---	---
Sanpete County	2,695	2,433	---	---	262
Utah County	---	---	---	---	---
III (Irrigated):					
Juab County	59,972	59,390	482	100	---
Sanpete County	36,405	32,116	3,172	1,117	---
Utah County	---	---	---	---	---
IV (Nonirrigated):					
Juab County	97,157	77,405	2,856	1,672	15,224
Sanpete County	22,288	16,711	3,172	705	1,700
Utah County	---	---	---	---	---
IV (Irrigated):					
Juab County	91,698	35,235	4,905	51,558	---
Sanpete County	30,392	8,462	3,612	18,318	---
Utah County	2,052	---	---	2,052	---
V (Nonirrigated):					
Juab County	942	---	942	---	---
Sanpete County	3,194	---	3,194	---	---
Utah County	---	---	---	---	---
VI (Nonirrigated):					
Juab County	190,743	151,530	---	38,695	518
Sanpete County	127,968	97,711	---	28,200	2,057
Utah County	4,242	1,216	---	3,026	---
VII (Nonirrigated):					
Juab County	429,488	76,474	7,200	337,228	8,586
Sanpete County	230,244	59,279	8,375	151,620	10,970
Utah County	9,643	6,462	---	3,181	---
VIII (Nonirrigated):					
Juab County	---	---	---	---	---
Sanpete County	---	---	---	---	---
Utah County	---	---	---	---	---

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
AaF-------------------- Agassiz	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
AbF*:				
Agassiz---------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Rock outcrop.				
AcE*:				
Amtoft----------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Moderate: slope, dusty.
Rock outcrop.				
AcF*:				
Amtoft----------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				
AdE*:				
Amtoft----------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Moderate: slope, dusty.
Rock outcrop.				
AdF*:				
Amtoft----------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				
AeD-------------------- Ant Flat	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
AF*. Aquic Ustifluvents				
AG*. Argic Pachic Cryoborolls				
AhA-------------------- Ashdown	Moderate: dusty.	Moderate: dusty.	Moderate: small stones, dusty.	Severe: erodes easily.
AhB-------------------- Ashdown	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Severe: erodes easily.
AkA, AkB--------------- Ashdown	Moderate: dusty.	Moderate: dusty.	Moderate: small stones, dusty.	Severe: erodes easily.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
AmE------------------ Atepic	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe: slope.
BA*. Beaches				
Bb------------------- Benjamin	Severe: flooding, excess soidum, excess salt.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Slight.
Bc------------------- Benjamin	Severe: flooding, excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Slight.
BdD------------------ Bezzant	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: large stones, slope, dusty.
BdF------------------ Bezzant	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
BeD------------------ Bezzant	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: large stones, slope, dusty.
BeF------------------ Bezzant	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Bf------------------- Birdow	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
BgC------------------ Borvant	Severe: cemented pan.	Severe: cemented pan.	Severe: large stones, small stones.	Moderate: large stones, dusty.
BgD------------------ Borvant	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
BhD*:				
Borvant--------------	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Reywat---------------	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
BhF*:				
Borvant--------------	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: large stones, slope, small stones.	Severe: slope.
Reywat---------------	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
BkE*:				
Borvant	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Sandall	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: slope.
Bm: Bramwell	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: erodes easily.
BnD: Broadhead	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
BnF: Broadhead	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CaB: Calita	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
CaC: Calita	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
CaD: Calita	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
CbF*:				
Calpac	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.
Agassiz	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
CcF*:				
Calpac	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.
Lundy	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.
CdE*:				
Checkett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Moderate: slope, dusty.
Rock outcrop.				
Ce: Cheebe	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Severe: erodes easily.
Cf: Cheebe	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
CG*. Cumulic Haploxerolls				
DaC-------------------- Dagor	Severe: flooding.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
DbD-------------------- Deer Creek	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
DcD*:				
Deer Creek-----------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
Borvant--------------	Severe: cemented pan.	Severe: cemented pan.	Severe: large stones, small stones.	Moderate: large stones, dusty.
DdC-------------------- Donnardo	Moderate: dusty.	Moderate: dusty.	Moderate: large stones, slope, dusty.	Moderate: dusty.
DdE-------------------- Donnardo	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
DdF-------------------- Donnardo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DeF*:				
Donnardo-------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hiko Peak------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
DfB-------------------- Doyce	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
DfC-------------------- Doyce	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
DgC-------------------- Doyce	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
DhD-------------------- Dry Creek	Moderate: slope, large stones, dusty.	Moderate: slope, large stones, dusty.	Severe: slope, small stones.	Moderate: large stones, dusty.
DkD*:				
Dry Creek------------	Moderate: slope, large stones, dusty.	Moderate: slope, large stones, dusty.	Severe: slope, small stones.	Moderate: large stones, dusty.
Reebok---------------	Severe: cemented pan.	Severe: cemented pan.	Severe: large stones, slope, small stones.	Moderate: dusty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Dm: Duggins	Slight	Slight	Slight	Slight.
DN*. Dune land				
FaB: Firmage	Slight	Slight	Moderate: slope.	Slight.
FbF: Flygare	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
FcF*:				
Flygare	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Parkay	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
FdF*:				
Flygare	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Starley	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.
FeD, FeF: Fontreen	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.
FfD*:				
Fontreen	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.
Borvant	Severe: cemented pan.	Severe: cemented pan.	Severe: large stones, small stones.	Moderate: large stones, dusty.
FgB: Freedom	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
FgC: Freedom	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
FhB: Fridlo	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Severe: erodes easily.
GaBP: Genola	Moderate: dusty.	Slight	Slight	Slight.
GbA, GbB: Genola	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
GbC: Genola	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
GcA, GcB: Genola	Severe: flooding.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
GcC: Genola	Severe: flooding.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
GdDP: Goldrun	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.
GeD*:				
Goldrun	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.
Cheebe	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight.
GfD*:				
Goldrun	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.
Medburn	Slight	Slight	Moderate: slope.	Slight.
GgD*:				
Goldrun	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.
Rock outcrop.				
HaF: Hamtah	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HbA: Hansel	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
HbB: Hansel	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
Hc: Harding	Moderate: dusty, excess salt.	Moderate: excess salt, dusty.	Moderate: slope, dusty, excess salt.	Severe: erodes easily.
HdC: Hiko Peak	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Slight.
HdD: Hiko Peak	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
HdE: Hiko Peak	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
HeC: Hillfield	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
HfC: Hupp	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
HfD: Hupp	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.
JaD: Jericho	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, small stones, cemented pan.	Slight.
JbA: Juab	Moderate: dusty.	Moderate: dusty.	Moderate: small stones, dusty.	Severe: erodes easily.
JbB: Juab	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Severe: erodes easily.
JbC: Juab	Moserate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
JcB: Juab	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Severe: erodes easily.
JcC: Juab	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
JdC*:				
Juab	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
Juab, gravelly substratum	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
JeD: Justesen	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
KaB: Keigley	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
Kb: Kirkham	Severe: flooding.	Slight	Slight	Slight.
KcF*:				
Kitchell	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
LaA: Linoyer	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
LaB: Linoyer	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
LaC: Linoyer	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
LaD2: Linoyer	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
LbE------------------- Lizzant	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: large stones.
LbF, LcF-------------- Lizzant	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: large stones, slope.
LdE*:				
Lodar----------------	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Rock outcrop.				
LdF*:				
Lodar----------------	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
LeF*:				
Lundy----------------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
MaB, MbC2, McB-------- Manassa	Severe: excess salt.	Severe: excess salt.	Severe: excess salt.	Severe: erodes easily.
MdB*:				
Manassa--------------	Severe: excess salt.	Severe: excess salt.	Severe: excess salt.	Severe: erodes easily.
Mellor---------------	Moderate: dusty, excess salt.	Moderate: excess salt, dusty.	Moderate: dusty, excess salt.	Severe: erodes easily.
MeC------------------- Manila	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
MeD------------------- Manila	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.
MfA------------------- Medburn	Slight---------------	Slight---------------	Slight---------------	Slight.
MfB------------------- Medburn	Slight---------------	Slight---------------	Moderate: slope.	Slight.
Mg-------------------- Mellor	Moderate: dusty, excess salt.	Moderate: excess salt, dusty.	Moderate: dusty, excess salt.	Severe: erodes easily.
Mh-------------------- Mellor	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
MkC------------------- Modoc	Slight---------------	Slight---------------	Severe: slope.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Mm: Moroni	Slight	Slight	Slight	Slight.
MnF: Mortenson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MoC: Mountainville	Moderate: large stones, small stones.	Moderate: large stones, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones.
MpB: Mountainville	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.
MrB*:				
Mountainville	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.
Doyce	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
MsD: Mower	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
MtF*:				
Mower	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
MuB: Musinia	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
MuC: Musinia	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
MvB: Musinia	Slight	Slight	Slight	Severe: erodes easily.
MvC: Musinia	Slight	Slight	Moderate: slope.	Severe: erodes easily.
NaB: Nephi	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
OaD: Orcky	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
OaE: Orcky	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
PA*. Pachic Calcixerolls				
PB*. Pachic Haploxerolls				
PC*, PD*. Pachic Cryoborolls				

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
PeD*, PeF*:				
Parkay	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
PfA Parleys	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
PfB Parleys	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
PfC Parleys	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
PgC Pharo	Moderate: large stones, small stones.	Moderate: large stones, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, dusty.
PhD Pibler	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, small stones.	Slight.
PK*:				
Pits.				
Dumps.				
PmD Pober	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
PnD*:				
Pober	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Pibler	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, small stones.	Slight.
Po Provo Bay	Severe: flooding, wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness, flooding, excess salt.	Severe: wetness.
Pp*:				
Provo Bay	Severe: flooding, wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness, flooding, excess salt.	Severe: wetness.
Cheebe	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight.
RaD Reebok	Severe: cemented pan.	Severe: cemented pan.	Severe: large stones, slope, small stones.	Moderate: dusty.
RaE Reebok	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: large stones, slope, small stones.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
RbC------ Renol	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Moderate: large stones.
RcD*:				
Renol------	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Moderate: large stones.
Reebok------	Severe: cemented pan.	Severe: cemented pan.	Severe: large stones, slope, small stones.	Moderate: dusty.
RdE*:				
Reywat------	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Reebok------	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
ReE*:				
Reywat------	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Rock outcrop.				
ReF*:				
Reywat------	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
RF*. Rock outcrop				
RgF*:				
Rock outcrop.				
Amtoft------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe: slope.
RhF*:				
Rock outcrop.				
Lodar------	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.
RkF*:				
Rock outcrop.				
Lundy------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
RmF*:				
Rock outcrop.				
Saxby	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: large stones, slope.	Severe: slope.
RnF*:				
Rock outcrop.				
Sheep Creek	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
RoF*:				
Rock outcrop.				
Wallsburg	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: large stones.
RpD Rofiss	Moderate: slope, small stones, percs slowly.	Moderate: slope, small stones, percs slowly.	Severe: slope, small stones.	Slight.
Rr Roshe Springs	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
RS*. Rubble land				
Sa Saltair	Severe: flooding, wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness, flooding, excess salt.	Severe: wetness, erodes easily.
SbF Sandall	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: slope.
ScD Sanpete	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
ScF Sanpete	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
SdE*:				
Saxby	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Rock outcrop.				
SdF*:				
Saxby	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
SeB*:				
Saxby	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Rock outcrop.				
SeF*:				
Saxby	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
SfC Shabliss	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: dusty.
SfD Shabliss	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope, cemented pan.	Moderate: dusty.
SfE Shabliss	Severe: slope.	Severe: slope.	Severe: slope, cemented pan.	Moderate: slope, dusty.
SgC Shabliss	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: dusty.
ShE Sheep Creek	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
ShF, SkF Sheep Creek	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
SmE*:				
Sheep Creek	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Flygare	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
SN*: Slickens				
SoD Spager	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, small stones, cemented pan.	Moderate: dusty.
SpE*, SpF*:				
Starley	Severe: slope, large stones, small stones, depth to rock.	Severe: slope, large stones, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: large stones, slope.
Rock outcrop.				
SrE Sumine	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
SsE*:				
Sumine	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Reywat	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Rock outcrop.				
SsF*:				
Sumine	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Reywat	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.
Rock outcrop.				
TaA Taylorsville	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
TaB Taylorsville	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
TaC Taylorsville	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
TbB Thiokol	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
TcC*:				
Thiokol	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
Linoyer	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
TdB Truesdale	Slight	Slight	Moderate: slope, cemented pan.	Severe: erodes easily.
TE*. Typic Cryoborolls				
TF*. Typic Haploborolls				
WaB, WbB Wales	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
WcF*:				
Wallsburg	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: large stones.
Rock outcrop.				

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
WdE*, WdF*:				
Wallsburg	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: large stones.
Yeates Hollow	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.
WeB Woodrow	Slight	Slight	Slight	Severe: erodes easily.
WfA, WfB Woodrow	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.
WfC Woodrow	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
XA*: Xerertic Torriorthents.				
XB*: Xeric Torriorthents.				
Rock outcrop.				
YaC Yeates Hollow	Severe: small stones.	Severe: small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, dusty.
YaD Yeates Hollow	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
YaE, YbF Yeates Hollow	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
AaF: Agassiz	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
AbF*: Agassiz	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
AcE*, AcF*, AdE*, AdF*: Amtoft	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Rock outcrop.											
AeD: Ant Flat	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
AF*. Aquic Ustifluvents											
AG*. Argic Pachic Cryoborolls											
AhA, AhB: Ashdown	Poor	Poor	Fair	Poor	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
AkA, AkB: Ashdown	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
AmE: Atepic	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
BA*. Beaches											
Bb: Benjamin	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Bc: Benjamin	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Fair	Very poor.
BdD: Bezzant	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
BdF: Bezzant	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
BeD: Bezzant	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
BeF: Bezzant	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Bf: Birdow	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.	Good.
BgC, BgD: Borvant	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
BhD*, BhF*:											
Borvant-----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Reywat------------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
BkE*:											
Borvant-----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Sandall-----------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Bm----------------- Bramwell	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Fair	Very poor.	Very poor.	Fair	Very poor.
BnD---------------- Broadhead	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
BnF---------------- Broadhead	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
CaB, CaC, CaD------ Calita	Poor	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
CbF*:											
Calpac------------	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Very poor.	Fair	Very poor.	Fair.
Agassiz-----------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
CcF*:											
Calpac------------	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Very poor.	Fair	Very poor.	Fair.
Lundy-------------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
CdE*:											
Checkett----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Rock outcrop.											
Ce, Cf------------- Cheebe	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
CG*. Cumulic Haploxerolls											
DaC---------------- Dagor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
DbD---------------- Deer Creek	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
DcD*:											
Deer Creek--------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
Borvant-----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
DdC, DdE, DdF: Donnardo	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
DeF*:											
Donnardo	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Hiko Peak	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
DfB, DfC: Doyce	Fair	Good	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
DgC: Doyce	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
DhD: Dry Creek	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
DkD*:											
Dry Creek	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
Reebok	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Dm: Duggins	Poor	Poor	Fair	Poor	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
DN*. Dune land											
FaB: Firmage	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
FbF: Flygare	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
FcF*:											
Flygare	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Parkay	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Rock outcrop.											
FdF*:											
Flygare	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Starley	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
FeD, FeF: Fontreen	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
FfD*:											
Fontreen	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Borvant	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
FgB, FgC: Freedom	Poor	Fair	Fair	Poor	Fair	Poor	Very poor.	Poor	Poor	Very poor.	Fair.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
FhB----------------- Fridlo	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
GaBP, GbA, GbB, GbC---------------- Genola	Very poor.	Very poor.	Fair	Poor	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
GcA, GcB, GcC------- Genola	Fair	Good	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
GdDP. Goldrun	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
GeD*: Goldrun.	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Cheebe-------------	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
GfD*: Goldrun.	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Medburn------------	Very poor.	Very poor.	Fair	Poor	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
GgD*: Goldrun.	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor
Rock outcrop.											
HaF----------------- Hamtah	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
HbA, HbB------------ Hansel	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
Hc------------------ Harding	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
HdC, HdD, HdE------- Hiko Peak	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
HeC----------------- Hillfield	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.	Good.
HfC, HfD------------ Hupp	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
JaD----------------- Jericho	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
JbA, JbB, JbC------- Juab	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
JcB, JcC------------ Juab	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
JdC*: Juab---------------	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
Juab, gravelly substratum											
JeD----------------- Justesen	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
KaB: Keigley	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
Kb: Kirkham	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair	Good.
KcF*:											
Kitchell	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Rock outcrop.											
LaA, LaB, LaC, LaD2: Linoyer	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
LbE, LbF, LcF. Lizzant											
LdE*, LdF*:											
Lodar	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
LeF*:											
Lundy	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
MaB: Manassa	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Poor	Very poor.	Very poor.	Poor	Very poor.
MbC2: Manassa	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
McB: Manassa	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Poor	Very poor.	Very poor.	Poor	Very poor.
MdB*:											
Manassa	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Poor	Very poor.	Very poor.	Poor	Very poor.
Mellor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.
MeC, MeD: Manila	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
MfA, MfB: Medburn	Very poor.	Very poor.	Fair	Poor	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
Mg: Mellor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.
Mh: Mellor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
MkC: Modoc	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Mm: Moroni	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
MnF: Mortenson	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
MoC----------------- Mountainville	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
MpB----------------- Mountainville	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
MrB*:											
Mountainville-----	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
Doyce-------------	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
MsD----------------- Mower	Poor	Poor	Good	Fair	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
MtF*:											
Mower-------------	Poor	Poor	Good	Fair	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
Rock outcrop.											
MuB, MuC, MvB, MvC- Musinia	Very poor.	Very poor.	Fair	Poor	Fair	Poor	Very poor.	Poor	Poor	Very poor.	Fair.
NaB----------------- Nephi	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
OaD----------------- Orcky	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
OaE----------------- Orcky	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
PA*. Pachic Calcixerolls											
PB*. Pachic Haploxerolls											
PC*, PD*. Pachic Cryoborolls											
PeD*, PeF*:											
Parkay------------	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Rock outcrop.											
PfA, PfB, PfC------- Parleys	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
PgC----------------- Pharo	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
PhD----------------- Pibler	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
PK*:											
Pits.											
Dumps.											
PmD----------------- Pober	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
PnD*:											
Pober	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Pibler	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Po: Provo Bay	Very poor.	Poor	Poor	Very poor.	Poor	Good	Good	Very poor.	Very poor.	Good	Poor.
Pp*:											
Provo Bay	Very poor.	Poor	Poor	Very poor.	Poor	Good	Good	Very poor.	Very poor.	Good	Poor.
Cheebe.											
RaD, RaE: Reebok	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
RbC: Renol	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
RcD*:											
Renol	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Reebok	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
RdE*:											
Reywat	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Reebok	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
ReE*, ReF*:											
Reywat	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Rock outcrop.											
RF*. Rock outcrop											
RgF*:											
Rock outcrop.											
Amtoft	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
RhF*:											
Rock outcrop.											
Lodar	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
RkF*:											
Rock outcrop.											
Lundy	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
RmF*:											
Rock outcrop.											

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
RmF*:											
Saxby	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
RnF*: Rock outcrop.											
Sheep Creek	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
RoF*: Rock outcrop.											
Wallsburg	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
RpD Rofiss	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
Rr Roshe Springs	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair.
RS*. Rubble land											
Sa Saltair	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.
SbF Sandall	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
ScD, ScF Sanpete	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Fair.
SdE*, SdF*, SeB*, SeF*:											
Saxby	Very poor.	Very poor.	---	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
SfC, SfD, SfE, SgC Shabliss	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
ShE, ShF, SkF Sheep Creek	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
SmE*:											
Sheep Creek	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Flygare	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
SN*. Slickens											
SoD Spager	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
SpE*, SpF*:											
Starley	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Rock outcrop.											

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
SrE----------------- Sumine	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
SsE*, SsF*:											
Sumine-------------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Reywat-------------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Rock outcrop.											
TaA, TaB----------- Taylorsville	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.	Good.
TaC----------------- Taylorsville	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
TbB----------------- Thiokol	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
TcC*:											
Thiokol------------	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
Linoyer------------	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
TdB----------------- Truesdale	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Poor	Poor	Very poor.	Poor.
TE*. Typic Cryoborolls											
TF*. Typic Haploborolls											
WaB, WbB----------- Wales	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
WcF*:											
Wallsburg----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
WdE*:											
Wallsburg----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Yeates Hollow------	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
WdF*:											
Wallsburg----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Yeates Hollow------	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
WeB, WfA, WfB, WfC- Woodrow	Very poor.	Very poor.	Fair	Poor	Fair	Poor	Very poor.	Poor	Poor	Very poor.	Fair.
XA*. Xerertic Torriorthents											

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
XB*:											
Xeric Torriorthents.											
Rock outcrop.											
YaC, YaD, YaE------ Yeates Hollow	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
YbF---------------- Yeates Hollow	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AaF: Agassiz	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope, thin layer.
AbF*:						
Agassiz	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope, thin layer.
Rock outcrop.						
AcE*, AcF*, AdE*, AdF*:						
Amtoft	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Rock outcrop.						
AeD: Ant Flat	Moderate: too clayey, slope.	Severe: shrink-swell.	Moderate: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
AF*. Aquic Ustifluvents						
AG*. Argic Pachic Cryoborolls						
AhA, AhB, AkA, AkB: Ashdown	Slight	Slight	Slight	Slight	Moderate: low strength, frost action.	Slight.
AmE: Atepic	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: thin layer.
BA*. Beaches						
Bb: Benjamin	Moderate: too clayey, wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
Bc: Benjamin	Moderate: too clayey, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, frost action.	Severe: excess salt, excess sodium.
BdD, BdF, BeD, BeF: Bezzant	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.
Bf: Birdow	Slight	Slight	Slight	Slight	Moderate: frost action.	Slight.
BgC: Borvant	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: thin layer.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BgD---------------- Borvant	Severe: cemented pan, large stones, slope.	Severe: slope, cemented pan, large stones.	Severe: cemented pan, slope, large stones.	Severe: slope, cemented pan, large stones.	Severe: cemented pan, slope, large stones.	Severe: slope, thin layer.
BhD*, BhF*:						
Borvant-----------	Severe: cemented pan, large stones, slope.	Severe: slope, cemented pan, large stones.	Severe: cemented pan, slope, large stones.	Severe: slope, cemented pan, large stones.	Severe: cemented pan, slope, large stones.	Severe: slope, thin layer.
Reywat------------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
BkE*:						
Borvant-----------	Severe: cemented pan, large stones, slope.	Severe: slope, cemented pan, large stones.	Severe: cemented pan, slope, large stones.	Severe: slope, cemented pan, large stones.	Severe: cemented pan, slope, large stones.	Severe: slope, thin layer.
Sandall-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bm----------------- Bramwell	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Severe: excess salt, excess sodium.
BnD---------------- Broadhead	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
BnF---------------- Broadhead	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, slope, shrink-swell.	Severe: slope.
CaB---------------- Calita	Slight----------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: low strength, frost action.	Slight.
CaC---------------- Calita	Slight----------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: low strength, frost action.	Slight.
CaD---------------- Calita	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: slope.
CbF*:						
Calpac------------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.
Agassiz-----------	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope, thin layer.
CcF*:						
Calpac------------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CcF*:						
Lundy	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, thin layer.
CdE*:						
Checkett	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, thin layer.
Rock outcrop.						
Ce, Cf Cheebe	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, frost action, shrink-swell.	Slight.
CG*. Cumulic Haploxerolls						
DaC Dagor	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
DbD Deer Creek	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope.	Severe: shrink-swell, slope.	Severe: low strength, slope, shrink-swell.	Moderate: small stones.
DcD*:						
Deer Creek	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope.	Severe: shrink-swell, slope.	Severe: low strength, slope, shrink-swell.	Moderate: small stones.
Borvant	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: thin layer.
DdC Donnardo	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: frost action, large stones.	Moderate: large stones, droughty.
DdE, DdF Donnardo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DeF*:						
Donnardo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hiko Peak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DfB Doyce	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: frost action, shrink-swell.	Slight.
DfC Doyce	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: frost action, shrink-swell.	Slight.
DgC Doyce	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Severe: low strength.	Slight.
DhD Dry Creek	Moderate: too clayey, large stones, slope.	Severe: shrink-swell.	Moderate: slope, large stones.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Severe: large stones.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DkD*:						
Dry Creek	Moderate: too clayey, large stones, slope.	Severe: shrink-swell.	Moderate: slope, large stones.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Severe: large stones.
Reebok	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Severe: thin layer.
Dm: Duggins	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
DN*. Dune land						
FaB: Firmage	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: frost action.	Moderate: large stones, droughty.
FbF: Flygare	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
FcF*:						
Flygare	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Parkay	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.
Rock outcrop.						
FdF*:						
Flygare	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Starley	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, droughty.
FeD, FeF: Fontreen	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, frost action, large stones.	Moderate: small stones, large stones, slope.
FfD*:						
Fontreen	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, frost action, large stones.	Moderate: small stones, large stones, slope.
Borvant	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: thin layer.
FgB, FgC: Freedom	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
FhB: Fridlo	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Severe: excess sodium.
GaBP, GbA, GbB, GbC, GcA, GcB, GcC: Genola	Slight	Slight	Slight	Slight	Severe: frost action.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GdDP: Goldrun	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
GeD*:						
Goldrun	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Cheebe	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, frost action, shrink-swell.	Slight.
GfD*:						
Goldrun	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Medburn	Slight	Slight	Slight	Slight	Slight	Moderate: droughty.
GgD*:						
Goldrun	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Rock outcrop.						
HaF: Hamtah	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
HbA, HbB: Hansel	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Hc: Harding	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Moderate: excess salt, droughty.
HdC: Hiko Peak	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: frost action, large stones.	Moderate: small stones, large stones.
HdD: Hiko Peak	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, frost action, large stones.	Moderate: small stones, large stones, slope.
HdE: Hiko Peak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HeC: Hillfield	Slight	Slight	Slight	Slight	Severe: frost action.	Slight.
HfC: Hupp	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: frost action, large stones.	Moderate: small stones, large stones.
HfD: Hupp	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, frost action, large stones.	Moderate: small stones, large stones.
JaD: Jericho	Severe: cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Moderate: cemented pan, slope, frost action.	Severe: thin layer.
JbA, JbB: Juab	Slight	Slight	Slight	Slight	Moderate: frost action.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
JbC-----------Juab	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
JcB-----------Juab	Slight	Slight	Slight	Slight	Moderate: frost action.	Slight.
JcC-----------Juab	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
JdC*:						
Juab	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
Juab, gravelly substratum	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
JeD-----------Justesen	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
KaB-----------Keigley	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
Kb-----------Kirkham	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, frost action.	Slight.
KcF*:						
Kitchell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
LaA. Linoyer						
LaB, LaC-----------Linoyer	Slight	Slight	Slight	Slight	Slight	Moderate: droughty.
LaD2-----------Linoyer	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
LbE, LbF, LcF-----Lizzant	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.
LdE*, LdF*:						
Lodar	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Rock outcrop.						
LeF*:						
Lundy	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, thin layer.
Rock outcrop.						
MaB, MbC2, McB----Manassa	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: excess salt.
MdB*:						
Manassa	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: excess salt.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MdB*:						
Mellor	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: droughty.
MeC Manila	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
MeD Manila	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
MfA, MfB Medburn	Slight	Slight	Slight	Slight	Slight	Moderate: droughty.
Mg Mellor	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: droughty.
Mh Mellor	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Severe: frost action.	Moderate: droughty.
MkC Modoc	Moderate: cemented pan.	Slight	Moderate: cemented pan.	Moderate: slope.	Moderate: frost action.	Moderate: droughty, thin layer.
Mm Moroni	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
MnF Mortenson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MoC Mountainville	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.
MpB Mountainville	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Moderate: small stones, droughty.
MrB*:						
Mountainville	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Moderate: small stones, droughty.
Doyce	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: frost action, shrink-swell.	Slight.
MsD Mower	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Moderate: slope, frost action, shrink-swell.	Moderate: slope, thin layer.
MtF*:						
Mower	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
MuB, MuC, MvB, MvC Musinia	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: frost action.	Slight.
NaB Nephi	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
OaD Orcky	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Severe: droughty.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
OaE------------------ Orcky	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
PA*. Pachic Calcixerolls						
PB*. Pachic Haploxerolls						
PC*, PD*. Pachic Cryoborolls						
PeD*, PeF*:						
Parkay--------------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.
Rock outcrop.						
PfA, PfB------------ Parleys	Slight-----------	Moderate: shrink-swell.	Slight-----------	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
PfC------------------ Parleys	Slight-----------	Moderate: shrink-swell.	Slight-----------	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
PgC------------------ Pharo	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: frost action, large stones.	Severe: large stones.
PhD------------------ Pibler	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Severe: thin layer.
PK*: Pits.						
Dumps.						
PmD------------------ Pober	Severe: cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Moderate: cemented pan, slope, frost action.	Moderate: droughty, slope, thin layer.
PnD*:						
Pober---------------	Severe: cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Moderate: cemented pan, slope, frost action.	Moderate: droughty, slope, thin layer.
Pibler--------------	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Severe: thin layer.
Po-------------------- Provo Bay	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: excess salt, wetness, flooding.
Pp*:						
Provo Bay-----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: excess salt, wetness, flooding.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Pp*:						
Cheebe	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, frost action, shrink-swell.	Slight.
RaD Reebok	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Severe: thin layer.
RaE Reebok	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Severe: cemented pan, slope.	Severe: slope, thin layer.
RbC Renol	Severe: cemented pan.	Moderate: cemented pan, large stones.	Severe: cemented pan.	Moderate: slope, cemented pan, large stones.	Moderate: cemented pan, frost action.	Severe: large stones.
RcD*:						
Renol	Severe: cemented pan.	Moderate: cemented pan, large stones.	Severe: cemented pan.	Moderate: slope, cemented pan, large stones.	Moderate: cemented pan, frost action.	Severe: large stones.
Reebok	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Severe: thin layer.
RdE*:						
Reywat	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Reebok	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Severe: cemented pan, slope.	Severe: slope, thin layer.
Rock outcrop.						
ReE*, ReF*:						
Reywat	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Rock outcrop.						
RF*. Rock outcrop						
RgF*:						
Rock outcrop.						
Amtoft	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
RhF*:						
Rock outcrop.						
Lodar	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
RkF*:						
Rock outcrop.						

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
RkF*:						
Lundy	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, thin layer.
RmF*:						
Rock outcrop.						
Saxby	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: large stones, thin layer.
RnF*:						
Rock outcrop.						
Sheep Creek	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
RoF*:						
Rock outcrop.						
Wallsburg	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, thin layer.
RpD Rofiss	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, large stones, droughty.
Rr Roshe Springs	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness.
RS*. Rubble land						
Sa Saltair	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: excess salt, wetness, droughty.
SbF Sandall	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
ScD Sanpete	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, slope.
ScF Sanpete	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SdE*, SdF*, SeB*, SeF*:						
Saxby	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: large stones, slope, thin layer.
Rock outcrop.						

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SfC---------------- Shabliss	Moderate: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan, frost action, low strength.	Severe: thin layer.
SfD---------------- Shabliss	Moderate: cemented pan, slope.	Moderate: cemented pan, slope.	Moderate: cemented pan, slope.	Severe: slope.	Moderate: cemented pan, slope, low strength.	Severe: thin layer.
SfE---------------- Shabliss	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: thin layer.
SgC---------------- Shabliss	Moderate: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan, frost action, low strength.	Severe: thin layer.
ShE, ShF, SkF------ Sheep Creek	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
SmE*: Sheep Creek-------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Flygare-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SoD---------------- Spager	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Severe: thin layer.
SpE*, SpF*: Starley-----------	Severe: large stones, slope, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: small stones, large stones, droughty, depth to rock.
Rock outcrop.						
SrE---------------- Sumine	Severe: depth to rock, large stones, slope.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
SsE*, SsF*: Sumine------------	Severe: depth to rock, large stones, slope.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
Reywat------------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Rock outcrop.						
TaA, TaB----------- Taylorsville	Slight----------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
TaC----------------- Taylorsville	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
TbB----------------- Thiokol	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
TcC*:						
Thiokol-----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Linoyer-----------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
TdB----------------- Truesdale	Moderate: cemented pan.	Slight---------	Slight---------	Slight---------	Severe: frost action.	Moderate: thin layer.
TE*. Typic Cryoborolls						
TF*. Typic Haploborolls						
WaB, WbB----------- Wales	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
WcF*:						
Wallsburg---------	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, thin layer.
Rock outcrop.						
WdE*, WdF*:						
Wallsburg---------	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, thin layer.
Yeates Hollow-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones, slope.
WeB, WfA, WfB, WfC Woodrow	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
XA*. Xerertic Torriorthents						
XB*: Xeric Torriorthents.						
Rock outcrop.						
YaC----------------- Yeates Hollow	Moderate: too clayey, large stones, slope.	Moderate: shrink-swell, slope, large stones.	Moderate: slope, shrink-swell, large stones.	Severe: slope.	Moderate: slope, frost action, shrink-swell.	Severe: small stones, large stones.
YaD, YaE, YbF------ Yeates Hollow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AaF: Agassiz	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
AbF*:					
Agassiz	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
AcE*, AcF*, AdE*, AdF*:					
Amtoft	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
AeD: Ant Flat	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: thin layer.
AF*. Aquic Ustifluvents					
AG*. Argic Pachic Cryoborolls					
AhA: Ashdown	Severe: percs slowly.	Slight	Slight	Slight	Good.
AhB: Ashdown	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
AkA, AkB: Ashdown	Severe: percs slowly.	Slight	Slight	Slight	Good.
AmE: Atepic	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
BA*. Beaches					
Bb: Benjamin	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey.
Bc: Benjamin	Severe: wetness, percs slowly.	Severe: flooding, wetness.	Severe: wetness, too clayey, excess sodium.	Severe: wetness.	Poor: too clayey, excess salt, excess sodium.
BdD, BdF, BeD, BeF: Bezzant	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: large stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Bf------------------ Birdow	Moderate: percs slowly.	Slight-----------	Moderate: too clayey.	Slight-----------	Fair: too clayey.
BgC----------------- Borvant	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan.	Poor: area reclaim, small stones.
BgD----------------- Borvant	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope.	Poor: area reclaim, small stones, slope.
BhD*, BhF*:					
Borvant------------	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope.	Poor: area reclaim, small stones, slope.
Reywat-------------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, large stones, slope.
BkE*:					
Borvant------------	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope.	Poor: area reclaim, small stones, slope.
Sandall------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Bm------------------ Bramwell	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
BnD----------------- Broadhead	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
BnF----------------- Broadhead	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
CaB, CaC------------ Calita	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
CaD----------------- Calita	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
CbF*:					
Calpac-------------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: small stones, slope.
Agassiz------------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CcF*:					
Calpac	Severe: slope, large stones.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: small stones, slope.
Lundy	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
CdE*:					
Checkett	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
Ce, Cf Cheebe	Severe: percs slowly.	Slight	Severe: too clayey, excess salt.	Slight	Poor: too clayey, hard to pack.
CG*. Cumulic Haploxerolls					
DaC Dagor	Moderate: flooding, percs slowly.	Severe: flooding.	Moderate: flooding.	Moderate: flooding.	Good.
DbD Deer Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
DcD*:					
Deer Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Borvant	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan.	Poor: area reclaim, small stones.
DdC Donnardo	Moderate: large stones.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
DdE, DdF Donnardo	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
DeF*:					
Donnardo	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
Hiko Peak	Severe: slope.	Severe: seepage, slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
DfB, DfC Doyce	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Fair: small stones.
DgC Doyce	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
DhD------------------ Dry Creek	Severe: percs slowly.	Severe: slope.	Severe: too clayey, large stones.	Moderate: slope.	Poor: too clayey, large stones.
DkD*:					
Dry Creek-----------	Severe: percs slowly.	Severe: slope.	Severe: too clayey, large stones.	Moderate: slope.	Poor: too clayey, large stones.
Reebok--------------	Severe: cemented pan.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan.	Poor: area reclaim, small stones.
Dm------------------- Duggins	Severe: percs slowly.	Slight-----------	Slight-----------	Slight-----------	Good.
DN*. Dune land					
FaB------------------ Firmage	Moderate: percs slowly.	Moderate: seepage, slope, large stones.	Moderate: large stones.	Slight-----------	Poor: large stones.
FbF------------------ Flygare	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.	Severe: slope.	Poor: large stones, slope.
FcF*:					
Flygare-------------	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.	Severe: slope.	Poor: large stones, slope.
Parkay--------------	Severe: percs slowly, slope, large stones.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: large stones, slope.
Rock outcrop.					
FdF*:					
Flygare-------------	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.	Severe: slope.	Poor: large stones, slope.
Starley-------------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: large stones, slope.
FeD, FeF------------ Fontreen	Moderate: slope, large stones.	Severe: seepage, slope, large stones.	Severe: seepage, large stones.	Severe: seepage.	Poor: small stones.
FfD*:					
Fontreen------------	Moderate: slope, large stones.	Severe: seepage, slope, large stones.	Severe: seepage, large stones.	Severe: seepage.	Poor: small stones.
Borvant-------------	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan.	Poor: area reclaim, small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
FgB: Freedom	Severe: percs slowly.	Slight	Slight	Slight	Good.
FgC: Freedom	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
FhB: Fridlo	Severe: percs slowly.	Moderate: slope, wetness.	Severe: wetness, excess sodium.	Moderate: wetness.	Poor: excess sodium.
GaBP, GbA, GbB: Genola	Moderate: percs slowly.	Slight	Slight	Slight	Good.
GbC: Genola	Moderate: percs slowly.	Moderate: slope.	Slight	Slight	Good.
GcA, GcB: Genola	Moderate: percs slowly.	Slight	Slight	Slight	Good.
GcC: Genola	Moderate: percs slowly.	Moderate: slope.	Slight	Slight	Good.
GdDP: Goldrun	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy.
GeD*:					
Goldrun	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy.
Cheebe	Severe: percs slowly.	Slight	Severe: too clayey, excess salt.	Slight	Poor: too clayey, hard to pack.
GfD*:					
Goldrun	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy.
Medburn	Slight	Severe: seepage.	Slight	Slight	Fair: small stones.
GgD*:					
Goldrun	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy.
Rock outcrop.					
HaF: Hamtah	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: slope, too clayey, large stones.	Severe: seepage, slope.	Poor: too clayey, hard to pack, large stones.
HbA: Hansel	Severe: percs slowly.	Slight	Slight	Slight	Good.
HbB: Hansel	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Hc: Harding	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
HdC: Hiko Peak	Moderate: large stones.	Severe: seepage.	Severe: large stones.	Slight	Poor: small stones.
HdD: Hiko Peak	Moderate: slope, large stones.	Severe: seepage, slope.	Severe: large stones.	Moderate: slope.	Poor: small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HdE: Hiko Peak	Severe: slope.	Severe: seepage, slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
HeC: Hillfield	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
HfC: Hupp	Moderate: large stones.	Severe: seepage.	Severe: seepage, large stones.	Severe: seepage.	Poor: small stones.
HfD: Hupp	Moderate: slope, large stones.	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: seepage.	Poor: small stones.
JaD: Jericho	Severe: cemented pan.	Severe: seepage, cemented pan, slope.	Severe: seepage.	Severe: cemented pan, seepage.	Poor: area reclaim, small stones.
JbA: Juab	Moderate: percs slowly.	Slight	Slight	Slight	Good.
JbB, JbC: Juab	Moderate: percs slowly.	Moderate: slope.	Slight	Slight	Good.
JcB, JcC: Juab	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Poor: small stones.
JdC*:					
Juab	Moderate: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Juab, gravelly substratum	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Poor: small stones.
JeD: Justesen	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
KaB: Keigley	Severe: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
Kb: Kirkham	Severe: wetness, percs slowly.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
KcF*:					
Kitchell	Severe: slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: small stones, slope.
Rock outcrop.					
LaA, LaB: Linoyer	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LaC------------------ Linoyer	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
LaD2----------------- Linoyer	Moderate: percs slowly.	Severe: slope.	Slight-----------	Slight-----------	Good.
LbE, LbF, LcF-------- Lizzant	Severe: slope, large stones.	Severe: seepage, slope, large stones.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: large stones, slope.
LdE*, LdF*:					
Lodar---------------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
LeF*:					
Lundy---------------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
MaB------------------ Manassa	Severe: percs slowly.	Slight-----------	Severe: excess salt.	Slight-----------	Good.
MbC2----------------- Manassa	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight-----------	Good.
McB------------------ Manassa	Severe: percs slowly.	Slight-----------	Severe: excess salt.	Slight-----------	Good.
MdB*:					
Manassa-------------	Severe: percs slowly.	Slight-----------	Severe: excess salt.	Slight-----------	Good.
Mellor--------------	Severe: percs slowly.	Slight-----------	Severe: excess salt.	Slight-----------	Good.
MeC------------------ Manila	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----------	Poor: too clayey, hard to pack.
MeD------------------ Manila	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
MfA, MfB------------- Medburn	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Fair: small stones.
Mg------------------- Mellor	Severe: percs slowly.	Slight-----------	Severe: excess salt.	Slight-----------	Good.
Mh------------------- Mellor	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, excess salt.	Severe: wetness.	Fair: wetness.
MkC------------------ Modoc	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Poor: area reclaim.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Mm----------------- Moroni	Severe: percs slowly.	Slight-----------	Severe: too clayey.	Slight-----------	Poor: too clayey, hard to pack.
MnF----------------- Mortenson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey, large stones.	Severe: slope.	Poor: too clayey, small stones, slope.
MoC----------------- Mountainville	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: seepage.	Poor: large stones.
MpB----------------- Mountainville	Severe: large stones.	Severe: large stones.	Severe: seepage, large stones.	Severe: seepage.	Poor: seepage, small stones.
MrB*:					
Mountainville------	Severe: large stones.	Severe: large stones.	Severe: seepage, large stones.	Severe: seepage.	Poor: seepage, small stones.
Doyce--------------	Severe: percs slowly.	Moderate: slope.	Slight-----------	Slight-----------	Fair: small stones.
MsD----------------- Mower	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
MtF*:					
Mower--------------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
MuB----------------- Musinia	Severe: percs slowly.	Slight-----------	Moderate: too clayey.	Slight-----------	Fair: too clayey.
MuC----------------- Musinia	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
MvB----------------- Musinia	Severe: percs slowly.	Slight-----------	Moderate: too clayey.	Slight-----------	Fair: too clayey.
MvC----------------- Musinia	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
NaB----------------- Nephi	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
OaD----------------- Orcky	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
OaE----------------- Orcky	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
PA*. Pachic Calcixerolls					
PB*. Pachic Haploxerolls					

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PC*, PD*. Pachic Cryoborolls					
PeD*, PeF*:					
Parkay	Severe: percs slowly, slope, large stones.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: large stones, slope.
Rock outcrop.					
PfA Parleys	Severe: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
PfB, PfC Parleys	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
PgC Pharo	Moderate: percs slowly, large stones.	Moderate: seepage, slope, large stones.	Moderate: large stones.	Slight	Poor: small stones.
PhD Pibler	Severe: cemented pan.	Severe: seepage, cemented pan, slope.	Severe: cemented pan, large stones.	Severe: cemented pan.	Poor: area reclaim, small stones.
Pk*:					
Pits.					
Dumps.					
PmD Pober	Severe: cemented pan.	Severe: cemented pan, slope.	Severe: cemented pan.	Severe: cemented pan.	Poor: area reclaim, small stones.
PnD*:					
Pober	Severe: cemented pan.	Severe: cemented pan, slope.	Severe: cemented pan.	Severe: cemented pan.	Poor: area reclaim, small stones.
Pibler	Severe: cemented pan.	Severe: seepage, cemented pan, slope.	Severe: cemented pan, large stones.	Severe: cemented pan.	Poor: area reclaim, small stones.
Po Provo Bay	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, excess salt.	Severe: flooding, wetness.	Poor: small stones, wetness.
Pp*:					
Provo Bay	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, excess salt.	Severe: flooding, wetness.	Poor: small stones, wetness.
Cheebe	Severe: percs slowly.	Slight	Severe: too clayey, excess salt.	Slight	Poor: too clayey, hard to pack.
RaD Reebok	Severe: cemented pan.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan.	Poor: area reclaim, small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
RaE: Reebok	Severe: cemented pan, slope.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope.	Poor: area reclaim, small stones, slope.
RbC: Renol	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Poor: area reclaim, small stones.
RcD*:					
Renol	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Poor: area reclaim, small stones.
Reebok	Severe: cemented pan.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, large stones.	Severe: cemented pan.	Poor: area reclaim, small stones.
RdE*:					
Reywat	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, large stones, slope.
Reebok	Severe: cemented pan, slope.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope, large stones.	Severe: cemented pan, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
ReE*, ReF*:					
Reywat	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, large stones, slope.
Rock outcrop.					
RF*. Rock outcrop					
RgF*:					
Rock outcrop.					
Amtoft	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
RhF*:					
Rock outcrop.					
Lodar	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
RkF*:					
Rock outcrop.					
Lundy	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
RmF*:					
Rock outcrop.					
Saxby	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
RnF*:					
Rock outcrop.					
Sheep Creek	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, small stones, slope.
RoF*:					
Rock outcrop.					
Wallsburg	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, large stones.
RpD Rofiss	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: small stones.
Rr Roshe Springs	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.
RS*. Rubble land					
Sa Saltair	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, excess salt.	Severe: flooding, wetness.	Poor: wetness.
SbF Sandall	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
ScD Sanpete	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
ScF Sanpete	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
SdE*, SdF*, SeB*, SeF*:					
Saxby	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
SfC Shabliss	Severe: cemented pan.	Severe: seepage.	Moderate: cemented pan.	Slight	Poor: thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SfD------------------ Shabliss	Severe: cemented pan.	Severe: slope, seepage.	Moderate: cemented pan.	Moderate: slope.	Poor: thin layer.
SfE------------------ Shabliss	Severe: cemented pan, slope.	Severe: slope, seepage.	Moderate: cemented pan, slope.	Severe: slope.	Poor: slope, thin layer.
SgC------------------ Shabliss	Severe: cemented pan.	Severe: seepage.	Moderate: cemented pan.	Slight-----------	Poor: thin layer.
ShE, ShF, SkF-------- Sheep Creek	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, small stones, slope.
SmE*:					
Sheep Creek---------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Flygare-------------	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.	Severe: slope.	Poor: large stones, slope.
SoD------------------ Spager	Severe: cemented pan.	Severe: seepage, cemented pan, slope.	Severe: cemented pan.	Severe: cemented pan.	Poor: area reclaim, small stones.
SpE*, SpF*:					
Starley-------------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: large stones, slope.
Rock outcrop.					
SrE------------------ Sumine	Severe: depth to rock, slope, large stones.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, large stones, slope.
SsE*, SsF*:					
Sumine--------------	Severe: depth to rock, slope, large stones.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, large stones, slope.
Reywat--------------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, large stones, slope.
Rock outcrop.					
TaA------------------ Taylorsville	Severe: percs slowly.	Slight-----------	Moderate: too clayey.	Slight-----------	Fair: too clayey.
TaB, TaC------------- Taylorsville	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TbB------------------ Thiokol	Moderate: percs slowly.	Moderate: seepage.	Slight-----------	Slight-----------	Good.
TcC*:					
Thiokol------------	Moderate: percs slowly.	Moderate: seepage.	Slight-----------	Slight-----------	Good.
Linoyer------------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
TdB------------------ Truesdale	Severe: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Poor: area reclaim.
TE*. Typic Cryoborolls					
TF*. Typic Haploborolls					
WaB, WbB------------ Wales	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Fair: small stones.
WcF*:					
Wallsburg----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, large stones.
Rock outcrop.					
WdE*, WdF*:					
Wallsburg----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, large stones.
Yeates Hollow------	Severe: percs slowly, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope, too clayey.	Severe: slope.	Poor: too clayey, small stones, slope.
WeB, WfA, WfB------- Woodrow	Severe: percs slowly.	Slight-----------	Slight-----------	Slight-----------	Good.
WfC------------------ Woodrow	Severe: percs slowly.	Moderate: slope.	Slight-----------	Slight-----------	Good.
XA*. Xerertic Torriorthents					
XB*: Xeric Torriorthents.					
Rock outcrop.					
YaC------------------ Yeates Hollow	Severe: percs slowly.	Severe: seepage, slope, large stones.	Severe: seepage, too clayey.	Moderate: slope.	Poor: too clayey, small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
YaD, YaE, YbF------- Yeates Hollow	Severe: percs slowly, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope, too clayey.	Severe: slope.	Poor: too clayey, small stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AaF: Agassiz	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
AbF*:				
Agassiz	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
AcE*:				
Amtoft	Poor: area reclaim.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
AcF*:				
Amtoft	Poor: area reclaim, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
AdE*:				
Amtoft	Poor: area reclaim.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
AdF*:				
Amtoft	Poor: area reclaim, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
AeD: Ant Flat	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
AF*. Aquic Ustifluvents				
AG*. Argic pachic Cryoborolls				
AhA, AhB, AkA, AkB: Ashdown	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
AmE: Atepic	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BA*. Beaches				
Bb------------------- Benjamin	Fair: wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Bc------------------- Benjamin	Fair: wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
BdD------------------ Bezzant	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
BdF------------------ Bezzant	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
BeD------------------ Bezzant	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
BeF------------------ Bezzant	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
Bf------------------- Birdow	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
BgC------------------ Borvant	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones.
BgD------------------ Borvant	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
BhD*:				
Borvant--------------	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Reywat---------------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
BhF*:				
Borvant--------------	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Reywat---------------	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BkE*:				
Borvant	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Sandall	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Bm Bramwell	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
BnD Broadhead	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
BnF Broadhead	Poor: low strength, slope, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
CaB, CaC Calita	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
CaD Calita	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
CbF*:				
Calpac	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
Agassiz	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
CcF*:				
Calpac	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
Lundy	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
CdE*:				
Checkett	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
Ce, Cf Cheebe	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
CG*. Cumulic Haploxerolls				
DaC Dagor	Good	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
DbD: Deer Creek	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
DcD*:				
Deer Creek	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Borvant	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones.
DdC: Donnardo	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
DdE: Donnardo	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
DdF: Donnardo	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
DeF*:				
Donnardo	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Hiko Peak	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
DfB, DfC: Doyce	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
DgC: Doyce	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
DhD: Dry Creek	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
DkD*:				
Dry Creek	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Reebok	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Dm: Duggins	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
DN*. Dune land				
FaB: Firmage	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
FbF------------------- Flygare	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.
FcF*:				
Flygare--------------	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.
Parkay---------------	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
Rock outcrop.				
FdF*:				
Flygare--------------	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.
Starley--------------	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, slope.
FeD, FeF-------------- Fontreen	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
FfD*:				
Fontreen-------------	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Borvant--------------	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones.
FgB, FgC-------------- Freedom	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
FhB------------------- Fridlo	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
GaBP, GbA, GbB, GbC, GcA, GcB, GcC--------- Genola	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Good.
GdDP------------------ Goldrun	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
GeD*:				
Goldrun--------------	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Cheebe---------------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
GfD*:				
Goldrun--------------	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Medburn--------------	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
GgD*:				
Goldrun	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Rock outcrop.				
HaF Hamtah	Poor: low strength, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
HbA, HbB Hansel	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Hc Harding	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
HdC, HdD Hiko Peak	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
HdE Hiko Peak	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
HeC Hillfield	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
HfC, HfD Hupp	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
JaD Jericho	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
JbA, JbB, JbC Juab	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
JcB, JcC Juab	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
JdC*:				
Juab	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Juab, gravelly substratum	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
JeD Justesen	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
KaB Keigley	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Kb Kirkham	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
KcF*:				
Kitchell	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
LaA: Linoyer	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
LaB, LaC, LaD2: Linoyer	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
LbE: Lizzant	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
LbF, LcF: Lizzant	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
LdE*:				
Lodar	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
LdF*:				
Lodar	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
LeF*:				
Lundy	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
MaB, MbC2, McB: Manassa	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
MdB*:				
Manassa	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Mellor	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
MeC, MeD: Manila	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
MfA, MfB: Medburn	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Mg: Mellor	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Mh: Mellor	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
MkC: Modoc	Fair: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, thin layer.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Mm-------------------- Moroni	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
MnF------------------- Mortenson	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
MoC------------------- Mountainville	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim.
MpB------------------- Mountainville	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim.
MrB*:				
Mountainville---------	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim.
Doyce-----------------	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
MsD------------------- Mower	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
MtF*:				
Mower-----------------	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
MuB, MuC-------------- Musinia	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Good.
MvB, MvC-------------- Musinia	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
NaB------------------- Nephi	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Good.
OaD------------------- Orcky	Good-----------------	Improbable: small stones.	Probable-------------	Poor: small stones, area reclaim.
OaE------------------- Orcky	Poor: slope.	Improbable: small stones.	Probable-------------	Poor: small stones, area reclaim, slope.
PA*. Pachic Calcixerolls				
PB*. Pachic Haploxerolls				
PC*, PD*. Pachic Cryoborolls				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PeD*, PeF*:				
Parkay	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
Rock outcrop.				
PfA, PfB, PfC Parleys	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
PgC Pharo	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
PhD Pibler	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
PK*:				
Pits.				
Dumps.				
PmD Pober	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PnD*:				
Pober	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Pibler	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Po Provo Bay	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, excess salt.
Pp*:				
Provo Bay	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, excess salt.
Cheebe	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
RaD Reebok	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
RaE Reebok	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
RbC Renol	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
RcD*:				
Renol	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Reebok	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
RdE*:				
Reywat	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Reebok	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
ReE*:				
Reywat	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
ReF*:				
Reywat	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
RF*. Rock outcrop				
RgF*:				
Rock outcrop.				
Amtoft	Poor: area reclaim, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
RhF*:				
Rock outcrop.				
Lodar	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines	Poor: area reclaim, small stones, slope.
RkF*:				
Rock outcrop.				
Lundy	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
RmF*:				
Rock outcrop.				
Saxby	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, large stones, slope.
RnF*:				
Rock outcrop.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
RnF*:				
Sheep Creek	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
RoF*:				
Rock outcrop.				
Wallsburg	Poor: area reclaim, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, large stones, slope.
RpD Rofiss	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Rr Roshe Springs	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RS*. Rubble land				
Sa Saltair	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, wetness.
SbF Sandall	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
ScD Sanpete	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
ScF Sanpete	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
SdE*:				
Saxby	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
SdF*:				
Saxby	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
SeB*:				
Saxby	Poor: area reclaim, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SeF*:				
Saxby	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
SfC Shabliss	Fair: low strength, frost action.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, area reclaim.
SfD Shabliss	Fair: low strength, frost action.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, slope, area reclaim.
SfE Shabliss	Fair: low strength, slope, frost action.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SgC Shabliss	Fair: low strength, frost action.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, area reclaim.
ShE Sheep Creek	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
ShF, SkF Sheep Creek	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
SmE*:				
Sheep Creek	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Flygare	Fair: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.
SN*: Slickens				
SoD Spager	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
SpE*, SpF*:				
Starley	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, slope.
Rock outcrop.				
SrE Sumine	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, slope.
SsE*:				
Sumine	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SsE*:				
Reywat	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
SsF*:				
Sumine	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, slope.
Reywat	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
TaA, TaB, TaC Taylorsville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
TbB Thiokol	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
TcC*:				
Thiokol	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Linoyer	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
TdB Truesdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, small stones, thin layer.
TE*. Typic Cryoborolls				
TF*. Typic Haploborolls				
WaB, WbB Wales	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
WcF*:				
Wallsburg	Poor: area reclaim, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, large stones, slope.
Rock outcrop.				
WdE*, WdF*:				
Wallsburg	Poor: area reclaim, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, large stones, slope.
Yeates Hollow	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
WeB-------------------- Woodrow	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
WfA, WfB, WfC---------- Woodrow	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
XA*. Xerertic Torriorthents				
XB*: Xeric Torriorthents.				
Rock outcrop.				
YaC-------------------- Yeates Hollow	Fair: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim.
YaD-------------------- Yeates Hollow	Fair: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.
YaE, YbF--------------- Yeates Hollow	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
AaF--------------- Agassiz	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water----	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
AbF*: Agassiz----------	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water----	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.					
AcE*, AcF*, AdE*, AdF*: Amtoft----------	Severe: depth to rock, slope.	Severe: large stones.	Deep to water----	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.					
AeD--------------- Ant Flat	Severe: slope.	Moderate: piping.	Deep to water----	Percs slowly, slope.	Slope, erodes easily, percs slowly.
AF*. Aquic Ustifluvents					
AG*. Argic Pachic Cryoborolls					
AhA--------------- Ashdown	Slight------------	Severe: piping.	Deep to water----	Erodes easily----	Erodes easily.
AhB--------------- Ashdown	Moderate: slope.	Severe: piping.	Deep to water----	Slope, erodes easily.	Erodes easily.
AkA, AkB---------- Ashdown	Slight------------	Severe: piping.	Deep to water----	Erodes easily----	Erodes easily.
AmE--------------- Atepic	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water----	Percs slowly, depth to rock.	Slope, depth to rock.
BA*. Beaches					
Bb---------------- Benjamin	Slight------------	Moderate: thin layer, wetness, excess salt.	Percs slowly, frost action, excess salt.	Wetness, percs slowly.	Wetness, percs slowly.
Bc---------------- Benjamin	Slight------------	Severe: excess sodium, excess salt.	Percs slowly, frost action, excess salt.	Wetness, percs slowly.	Wetness, percs slowly.
BdD, BdF, BeD, BeF-------------- Bezzant	Severe: slope.	Severe: large stones.	Deep to water----	Large stones, droughty, slope.	Slope, large stones.
Bf---------------- Birdow	Moderate: seepage.	Severe: piping.	Deep to water----	Favorable--------	Erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions
BgC----------------- Borvant	Severe: cemented pan.	Severe: large stones.	Deep to water----	Large stones, droughty, cemented pan.	Large stones, cemented pan.
BgD----------------- Borvant	Severe: cemented pan, slope.	Severe: large stones.	Deep to water----	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
BhD*, BhF*:					
Borvant-----------	Severe: cemented pan, slope.	Severe: large stones.	Deep to water----	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
Reywat------------	Severe: depth to rock, slope.	Severe: large stones.	Deep to water----	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
BkE*:					
Borvant-----------	Severe: cemented pan, slope.	Severe: large stones.	Deep to water----	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
Sandall-----------	Severe: slope.	Severe: large stones.	Deep to water----	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Bm------------------ Bramwell	Slight------------	Severe: excess sodium.	Percs slowly, frost action, excess salt.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.
BnD, BnF----------- Broadhead	Severe: slope.	Moderate: hard to pack.	Deep to water----	Percs slowly, slope.	Slope, percs slowly.
CaB, CaC----------- Calita	Moderate: seepage, slope.	Severe: piping.	Deep to water----	Slope------------	Erodes easily.
CaD----------------- Calita	Severe: slope.	Severe: piping.	Deep to water----	Slope------------	Slope, erodes easily.
CbF*:					
Calpac------------	Severe: slope.	Severe: large stones.	Deep to water----	Large stones, droughty, slope.	Slope, large stones.
Agassiz-----------	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water----	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
CcF*:					
Calpac------------	Severe: slope.	Severe: large stones.	Deep to water----	Large stones, droughty, slope.	Slope, large stones.
Lundy-------------	Severe: depth to rock, slope.	Severe: large stones.	Deep to water----	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
CdE*:					
Checkett----------	Severe: depth to rock, slope.	Severe: large stones.	Deep to water----	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.					
Ce------------------ Cheebe	Slight------------	Severe: excess salt.	Deep to water----	Percs slowly, erodes easily, excess salt.	Erodes easily, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
Cf---------------- Cheebe	Slight------------	Severe: excess salt.	Deep to water----	Percs slowly, excess salt.	Percs slowly.
CG*. Cumulic Haploxerolls					
DaC--------------- Dagor	Moderate: seepage, slope.	Severe: piping.	Deep to water----	Slope------------	Erodes easily.
DbD--------------- Deer Creek	Severe: slope.	Moderate: large stones.	Deep to water----	Large stones, percs slowly, slope.	Slope, large stones.
DcD*:					
Deer Creek-------	Severe: slope.	Moderate: large stones.	Deep to water----	Large stones, percs slowly, slope.	Slope, large stones.
Borvant----------	Severe: cemented pan.	Severe: large stones.	Deep to water----	Large stones, droughty, cemented pan.	Large stones, cemented pan.
DdC--------------- Donnardo	Severe: seepage.	Moderate: large stones.	Deep to water----	Large stones, droughty, slope.	Large stones.
DdE, DdF---------- Donnardo	Severe: seepage, slope.	Moderate: large stones.	Deep to water----	Large stones, droughty, slope.	Slope, large stones.
DeF*:					
Donnardo---------	Severe: seepage, slope.	Moderate: large stones.	Deep to water----	Large stones, droughty, slope.	Slope, large stones.
Hiko Peak--------	Severe: seepage, slope.	Severe: seepage, large stones.	Deep to water----	Large stones, droughty, slope.	Slope, large stones.
DfB, DfC---------- Doyce	Moderate: slope.	Slight------------	Deep to water----	Slope------------	Favorable.
DgC--------------- Doyce	Moderate: seepage, slope.	Severe: piping.	Deep to water----	Slope, erodes easily.	Erodes easily.
DhD--------------- Dry Creek	Severe: slope.	Severe: large stones.	Deep to water----	Large stones, percs slowly, slope.	Slope, large stones.
DkD*:					
Dry Creek--------	Severe: slope.	Severe: large stones.	Deep to water----	Large stones, percs slowly, slope.	Slope, large stones.
Reebok-----------	Severe: cemented pan, slope.	Severe: large stones.	Deep to water----	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
Dm---------------- Duggins	Slight------------	Moderate: thin layer.	Deep to water----	Percs slowly-----	Percs slowly.
DN*. Dune land					

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions
FaB: Firmage	Moderate: seepage, slope.	Severe: piping.	Deep to water	Large stones, droughty, slope.	Large stones.
FbF: Flygare	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
FcF*:					
Flygare	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Parkay	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Rock outcrop.					
FdF*:					
Flygare	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Starley	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
FeD, FeF: Fontreen	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
FfD*:					
Fontreen	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Borvant	Severe: cemented pan.	Severe: large stones.	Deep to water	Large stones, droughty, cemented pan.	Large stones, cemented pan.
FgB: Freedom	Slight	Moderate: thin layer, piping.	Deep to water	Erodes easily	Erodes easily.
FgC: Freedom	Moderate: slope.	Moderate: thin layer, piping.	Deep to water	Slope, erodes easily.	Erodes easily.
FhB: Fridlo	Moderate: slope.	Severe: excess sodium.	Deep to water	Droughty, percs slowly, slope.	Erodes easily, percs slowly.
GaBP: Genola	Moderate: seepage.	Severe: piping.	Deep to water	Soil blowing	Erodes easily, soil blowing.
GbA, GbB: Genola	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily.
GbC: Genola	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily.
GcA, GcB: Genola	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions
GcC: Genola	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily.
GdDP: Goldrun	Severe: seepage.	Severe: seepage, piping.	Slope, cutbanks cave.	Slope, soil blowing, fast intake.	Slope, piping, too sandy.
GeD*:					
Goldrun	Severe: seepage.	Severe: seepage, piping.	Slope, cutbanks cave.	Slope, soil blowing, fast intake.	Slope, piping, too sandy.
Cheebe	Slight	Severe: excess salt.	Deep to water	Percs slowly, excess salt.	Percs slowly.
GfD*:					
Goldrun	Severe: seepage.	Severe: seepage, piping.	Slope, cutbanks cave.	Slope, soil blowing, fast intake.	Slope, piping, too sandy.
Medburn	Severe: seepage.	Severe: piping.	Deep to water	Droughty, soil blowing, slope.	Large stones, soil blowing.
GgD*:					
Goldrun	Severe: seepage.	Severe: seepage, piping.	Slope, cutbanks cave.	Slope, soil blowing, fast intake.	Slope, piping, too sandy.
Rock outcrop.					
HaF: Hamtah	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, percs slowly.	Slope, large stones, percs slowly.
HbA: Hansel	Slight	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
HbB: Hansel	Moderate: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
Hc: Harding	Slight	Severe: excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.
HdC: Hiko Peak	Severe: seepage.	Severe: seepage, large stones.	Deep to water	Large stones, droughty, slope.	Large stones.
HdD, HdE: Hiko Peak	Severe: seepage, slope.	Severe: seepage, large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
HeC: Hillfield	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
HfC: Hupp	Severe: seepage.	Moderate: large stones.	Deep to water	Large stones, droughty, slope.	Large stones.
HfD: Hupp	Severe: seepage, slope.	Moderate: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
JaD: Jericho	Severe: cemented pan, slope.	Severe: seepage.	Deep to water	Droughty, cemented pan, slope.	Slope, large stones, cemented pan.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions
JbA: Juab	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
JbB, JbC: Juab	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
JcB, JcC: Juab	Moderate: seepage, slope.	Severe: seepage.	Deep to water	Slope, erodes easily.	Erodes easily.
JdC*:					
Juab, gravelly substratum	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
Juab	Moderate: seepage, slope.	Severe: seepage.	Deep to water	Slope, erodes easily.	Erodes easily.
JeD: Justesen	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope, erodes easily.
KaB: Keigley	Slight	Moderate: piping.	Deep to water	Erodes easily	Erodes easily.
Kb: Kirkham	Slight	Severe: piping.	Frost action	Wetness	Erodes easily, wetness.
KcF*:					
Kitchell	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Rock outcrop.					
LaA: Linoyer	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily, soil blowing.
LaB: Linoyer	Moderate: seepage.	Severe: piping.	Deep to water	Droughty, soil blowing.	Erodes easily, soil blowing.
LaC, LaD2: Linoyer	Moderate: seepage, slope.	Severe: piping.	Deep to water	Droughty, soil blowing, slope.	Erodes easily, soil blowing.
LbE, LbF, LcF: Lizzant	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
LdE*, LdF*:					
Lodar	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.					
LeF*:					
Lundy	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.					
MaB: Manassa	Slight	Severe: piping, excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions
MbC2: Manassa	Moderate: slope.	Severe: piping, excess salt.	Deep to water	Droughty, percs slowly, slope.	Erodes easily, percs slowly.
McB: Manassa	Slight	Severe: piping, excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.
MdB*:					
Manassa	Slight	Severe: piping, excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.
Mellor	Slight	Severe: excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.
MeC: Manila	Moderate: slope.	Moderate: hard to pack.	Deep to water	Percs slowly, slope, erodes easily.	Large stones, erodes easily.
MeD: Manila	Severe: slope.	Moderate: hard to pack.	Deep to water	Percs slowly, slope, erodes easily.	Slope, large stones, erodes easily.
MfA: Medburn	Severe: seepage.	Severe: piping.	Deep to water	Droughty, soil blowing.	Large stones, soil blowing.
MfB: Medburn	Severe: seepage.	Severe: piping.	Deep to water	Droughty, soil blowing, slope.	Large stones, soil blowing.
Mg: Mellor	Slight	Severe: excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.
Mh: Mellor	Severe: seepage.	Severe: piping, excess salt.	Deep to water	Droughty, percs slowly, erodes easily.	Erodes easily.
MkC: Modoc	Moderate: cemented pan, slope.	Severe: piping.	Deep to water	Droughty, soil blowing, cemented pan.	Cemented pan, erodes easily, soil blowing.
Mm: Moroni	Slight	Moderate: hard to pack.	Deep to water	Percs slowly	Percs slowly.
MnF: Mortenson	Severe: slope.	Severe: large stones.	Deep to water	Large stones, percs slowly, slope.	Slope, large stones, percs slowly.
MoC: Mountainville	Moderate: seepage, slope.	Severe: piping, large stones.	Deep to water	Large stones, droughty, slope.	Large stones.
MpB: Mountainville	Severe: seepage.	Severe: seepage, large stones.	Deep to water	Large stones, droughty, slope.	Large stones, too sandy.
MrB*:					
Mountainville	Severe: seepage.	Severe: seepage, large stones.	Deep to water	Large stones, droughty, slope.	Large stones, too sandy.
Doyce	Moderate: slope.	Slight	Deep to water	Slope	Favorable.
MsD: Mower	Severe: slope.	Moderate: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions
MtF*:					
Mower	Severe: slope.	Moderate: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
Rock outcrop.					
MuB Musinia	Slight	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
MuC Musinia	Moderate: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
MvB Musinia	Slight	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
MvC Musinia	Moderate: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
NaB Nephi	Slight	Moderate: thin layer, piping.	Deep to water	Percs slowly, erodes easily.	Erodes easily, percs slowly.
OaD, OaE Orcky	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, rooting depth, slope.	Slope, too sandy.
PA*. Pachic Calcixerolls					
PB*. Pachic Haploxerolls					
PC*, PD*. Pachic Cryoborolls					
PeD*, PeF*:					
Parkay	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Rock outcrop.					
PfA Parleys	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily.
PfB, PfC Parleys	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily.
PgC Pharo	Moderate: seepage, slope.	Severe: seepage.	Deep to water	Large stones, droughty, slope.	Large stones.
PhD Pibler	Severe: cemented pan, slope.	Severe: large stones.	Deep to water	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
PK*:					
Pits.					
Dumps.					
PmD Pober	Severe: slope.	Severe: thin layer.	Deep to water	Droughty, soil blowing, cemented pan.	Slope, large stones, cemented pan.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions
PnD*:					
Pober	Severe: slope.	Severe: thin layer.	Deep to water	Droughty, soil blowing, cemented pan.	Slope, large stones, cemented pan.
Pibler	Severe: cemented pan, slope.	Severe: large stones.	Deep to water	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
Po Provo Bay	Slight	Severe: piping, wetness, excess salt.	Percs slowly, flooding, frost action.	Wetness, percs slowly, flooding.	Erodes easily, wetness, percs slowly.
Pp*:					
Provo Bay	Slight	Severe: piping, wetness, excess salt.	Percs slowly, flooding, frost action.	Wetness, percs slowly, flooding.	Erodes easily, wetness, percs slowly.
Cheebe	Slight	Severe: excess salt.	Deep to water	Percs slowly, excess salt.	Percs slowly.
RaD, RaE Reebok	Severe: cemented pan, slope.	Severe: large stones.	Deep to water	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
RbC Renol	Moderate: seepage, cemented pan, slope.	Severe: thin layer.	Deep to water	Large stones, droughty, cemented pan.	Large stones, cemented pan.
RcD*:					
Renol	Moderate: seepage, cemented pan, slope.	Severe: thin layer.	Deep to water	Large stones, droughty, cemented pan.	Large stones, cemented pan.
Reebok	Severe: cemented pan, slope.	Severe: large stones.	Deep to water	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
RdE*:					
Reywat	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Reebok	Severe: cemented pan, slope.	Severe: large stones.	Deep to water	Large stones, droughty, cemented pan.	Slope, large stones, cemented pan.
Rock outcrop.					
ReE*, ReF*:					
Reywat	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.					
RF*. Rock outcrop					
RgF*: Rock outcrop.					

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions
RgF*:					
Amtoft	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
RhF*: Rock outcrop.					
Lodar	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
RkF*: Rock outcrop.					
Lundy	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
RmF*: Rock outcrop.					
Saxby	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
RnF*: Rock outcrop.					
Sheep Creek	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
RoF*: Rock outcrop.					
Wallsburg	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Severe: large stones, depth to rock.	Slope, large stones, depth to rock.
RpD Rofiss	Severe: slope.	Slight	Deep to water	Droughty, slope.	Slope.
Rr Roshe Springs	Moderate: seepage.	Severe: piping, wetness.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.
RS*. Rubble land					
Sa Saltair	Slight	Severe: piping, wetness, excess salt.	Percs slowly, flooding, frost action.	Wetness, droughty, percs slowly.	Erodes easily, wetness, percs slowly.
SbF Sandall	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
ScD, ScF Sanpete	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, slope.	Slope.
SdE*, SdF*, SeB*, SeF*:					
Saxby	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
SdE*, SdF*, SeB*, SeF*: Rock outcrop.					
SfC: Shabliss	Severe: seepage, cemented pan.	Severe: piping.	Cemented pan, slope.	Rooting depth, erodes easily, slope.	Slope, cemented pan, erodes easily.
SfD, SfE: Shabliss	Severe: seepage, cemented pan, slope.	Severe: piping.	Cemented pan, slope.	Rooting depth, erodes easily, slope.	Slope, cemented pan, erodes easily.
SgC: Shabliss	Severe: seepage, cemented pan.	Severe: piping.	Cemented pan, slope.	Rooting depth, erodes easily, slope.	Slope, cemented pan, erodes easily.
ShE, ShF, SkF: Sheep Creek	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
SmE*: Sheep Creek	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Flygare	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
SN*: Slickens					
SoD: Spager	Severe: cemented pan, slope.	Severe: seepage.	Deep to water	Droughty, cemented pan, slope.	Slope, cemented pan.
SpE*, SpF*: Starley	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Rock outcrop.					
SrE: Sumine	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
SsE*, SsF*: Sumine	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Reywat	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.					
TaA: Taylorsville	Slight	Moderate: piping.	Deep to water	Percs slowly, erodes easily.	Erodes easily, percs slowly.
TaB, TaC: Taylorsville	Moderate: slope.	Moderate: piping.	Deep to water	Percs slowly, slope, erodes easily.	Erodes easily, percs slowly.
TbB: Thiokol	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions
TcC*:					
Thiokol	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
Linoyer	Moderate: seepage, slope.	Severe: piping.	Deep to water	Droughty, soil blowing, slope.	Erodes easily, soil blowing.
TdB Truesdale	Moderate: seepage, cemented pan, slope.	Severe: piping.	Deep to water	Soil blowing, cemented pan, slope.	Cemented pan, erodes easily, soil blowing.
TE*. Typic Cryoborolls					
TF*. Typic Haploborolls					
WaB, WbB Wales	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily.
WcF*:					
Wallsburg	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Severe: large stones, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.					
WdE*, WdF*:					
Wallsburg	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Severe: large stones, depth to rock.	Slope, large stones, depth to rock.
Yeates Hollow	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, percs slowly.	Slope, large stones, percs slowly.
WeB Woodrow	Slight	Severe: piping.	Deep to water	Soil blowing, percs slowly, erodes easily.	Erodes easily, soil blowing, percs slowly.
WfA, WfB Woodrow	Slight	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
WfC Woodrow	Moderate: slope.	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
XA*. Xerertic Torriorthents					
XB*: Xeric Torriorthents.					
Rock outcrop.					
YaC, YaD, YaE, YbF Yeates Hollow	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, percs slowly.	Slope, large stones, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AaF-------------- Agassiz	0-14	Very stony loam	GM-GC, SM-SC	A-4	30-50	60-80	50-70	45-65	35-50	20-30	5-10
	14-19	Very stony loam, extremely stony loam.	GM-GC	A-2, A-4	40-75	50-70	45-65	35-55	25-50	20-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
AbF*: Agassiz---------	0-14	Very stony loam	GM-GC, SM-SC	A-4	30-50	60-80	50-70	45-65	35-50	20-30	5-10
	14-19	Very stony loam, extremely stony loam.	GM-GC	A-2, A-4	40-75	50-70	45-65	35-55	25-50	20-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
AcE*, AcF*, AdE*, AdF*: Amtoft---------	0-5	Stony loam-------	SM-SC, GM-GC, CL-ML	A-4, A-2	5-25	60-85	55-80	40-75	30-60	20-25	5-10
	5-19	Very flaggy loam, very cobbly loam, very gravelly fine sandy loam.	GM-GC	A-2	30-60	25-40	20-35	15-30	10-25	20-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
AeD-------------- Ant Flat	0-10	Loam-------------	CL-ML, CL	A-4, A-6	0	80-100	75-100	65-100	50-85	25-35	5-15
	10-60	Clay loam, clay, silty clay.	CL, CH	A-6, A-7	0	80-100	75-100	70-100	55-95	35-60	15-35
AF*. Aquic Ustifluvents											
AG*. Argic pachic Cryoborolls											
AhA-------------- Ashdown	0-8	Loam-------------	CL-ML, CL	A-4, A-6	0	100	80-100	75-90	70-85	25-35	5-15
	8-60	Stratified silty clay loam to loam.	CL-ML, CL	A-4, A-6	0	100	80-100	75-90	70-85	25-40	5-15
AhB-------------- Ashdown	0-8	Loam-------------	CL-ML, CL	A-4, A-6	0	100	80-100	75-90	70-85	25-35	5-15
	8-60	Stratified silty clay loam to loam.	CL-ML, CL	A-4, A-6	0	100	80-100	75-90	70-85	25-40	5-15
AkA, AkB--------- Ashdown	0-8	Loam-------------	CL-ML, CL	A-4, A-6	0	100	80-100	75-90	70-85	25-35	5-15
	8-60	Stratified silty clay loam to loam.	CL-ML, CL	A-4, A-6	0	100	80-100	75-90	70-85	25-40	5-15
AmE-------------- Atepic	0-6	Shaly loam-------	CL	A-6	10-15	60-90	55-75	45-65	50-60	30-40	10-20
	6-15	Shaly silty clay loam.	CL	A-6	10-15	65-90	60-75	55-70	50-65	30-40	10-20
	15	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BA*. Beaches											
Bb-------------- Benjamin	0-8	Silty clay loam	CL, ML	A-7, A-6	0	100	100	90-100	75-95	35-50	10-25
	8-60	Silty clay, clay	CL	A-7, A-6	0	100	100	90-100	75-95	35-50	15-25
Bc-------------- Benjamin	0-12	Silty clay loam	CL	A-7, A-6	0	100	100	95-100	80-95	30-50	10-25
	12-60	Silty clay, silty clay loam.	CL	A-7, A-6	0	100	100	95-100	85-95	35-50	15-25
BdD, BdF, BeD, BeF------------- Bezzant	0-13	Gravelly loam----	GM-GC, SM-SC	A-4	15-30	70-80	60-75	50-70	40-50	20-30	5-10
	13-60	Very cobbly loam, very stony loam, very gravelly loam.	GM-GC	A-4, A-2	30-60	50-60	45-55	40-50	30-40	20-30	5-10
Bf-------------- Birdow	0-7	Loam-------------	CL-ML	A-4	0	100	100	95-100	65-90	20-30	5-10
	7-60	Loam, clay loam	CL-ML, CL	A-4, A-6	0	80-100	75-100	60-80	50-70	25-35	5-15
BgC, BgD--------- Borvant	0-9	Cobbly loam------	CL-ML	A-4	25-30	75-85	70-80	60-70	50-60	20-30	5-10
	9-19	Very gravelly loam, very cobbly loam.	GM-GC	A-2, A-4	20-55	35-65	30-60	25-50	20-40	20-30	5-10
	19	Indurated--------	---	---	---	---	---	---	---	---	---
BhD*, BhF*: Borvant---------	0-9	Cobbly loam------	CL-ML	A-4	25-30	75-85	70-80	60-70	50-60	20-30	5-10
	9-19	Very gravelly loam, very cobbly loam.	GM-GC	A-2, A-4	20-55	35-65	30-60	25-50	20-40	20-30	5-10
	19	Indurated--------	---	---	---	---	---	---	---	---	---
Reywat----------	0-5	Very stony loam	GM-GC, SM-SC	A-4, A-2	20-35	50-80	45-70	35-60	30-50	20-30	5-10
	5-9	Cobbly clay loam	CL	A-6	15-20	75-85	70-80	65-75	50-65	30-40	10-15
	9-17	Very cobbly clay loam, very stony clay loam, extremely stony clay loam.	GC, CL	A-6, A-2	30-50	55-85	50-80	45-75	35-55	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BkE*: Borvant---------	0-9	Cobbly loam------	CL-ML	A-4	25-30	75-85	70-80	60-70	50-60	20-30	5-10
	9-19	Very gravelly loam, very cobbly loam.	GM-GC	A-2, A-4	20-55	35-65	30-60	25-50	20-40	20-30	5-10
	19	Indurated--------	---	---	---	---	---	---	---	---	---
Sandall---------	0-5	Very cobbly loam	CL-ML, CL	A-4, A-6	20-30	70-85	60-85	55-80	50-70	25-35	5-15
	5-32	Very cobbly loam, very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	25-55	45-75	40-60	35-55	30-50	25-35	5-15
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bm-------------- Bramwell	0-17	Silt loam--------	CL, CL-ML	A-4, A-6	---	100	100	90-100	70-90	20-35	5-15
	17-60	Silty clay loam	CL	A-6, A-7	---	100	100	95-100	85-95	25-45	10-20
BnD, BnF--------- Broadhead	0-12	Loam-------------	ML, CL-ML	A-4	0-5	85-100	80-100	70-95	55-75	25-35	5-10
	12-60	Clay, clay loam, silty clay loam.	CL, CH	A-6, A-7	0-5	85-100	80-100	75-100	60-95	35-55	15-35
CaB, CaC, CaD---- Calita	0-7	Loam-------------	CL-ML	A-4	0	100	95-100	90-95	65-80	20-30	5-10
	7-60	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	80-95	60-80	25-35	5-15

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
CbF*:											
Calpac----------	0-21	Very cobbly loam	GM-GC, SM-SC	A-4	30-65	65-75	60-70	50-65	35-50	25-30	5-10
	21-34	Very cobbly loam, very flaggy loam, very gravelly loam.	GM-GC	A-4, A-2	30-60	40-70	35-65	30-55	25-45	25-30	5-10
	34-41	Extremely stony loam, very cobbly loam, very flaggy loam.	GM-GC, SM-SC	A-4, A-2	45-75	30-75	25-70	20-55	15-40	25-30	5-10
	41	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Agassiz---------	0-14	Very stony loam	GM-GC, SM-SC	A-4	30-50	60-80	50-70	45-65	35-50	20-30	5-10
	14-19	Very stony loam, extremely stony loam.	GM-GC	A-2, A-4	40-75	50-70	45-65	35-55	25-50	20-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CcF*:											
Calpac----------	0-21	Very cobbly loam	GM-GC, SM-SC	A-4	30-65	65-75	60-70	50-65	35-50	25-30	5-10
	21-34	Very cobbly loam, very flaggy loam, very gravelly loam.	GM-GC	A-4, A-2	30-60	40-70	35-65	30-55	25-45	25-30	5-10
	34-41	Extremely stony loam, very cobbly loam, very flaggy loam.	GM-GC, SM-SC	A-4, A-2	45-75	30-75	25-70	20-55	15-40	25-30	5-10
	41	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lundy-----------	0-9	Very cobbly loam	GM-GC	A-2, A-4	25-50	50-65	45-60	35-55	25-45	20-30	5-10
	9-19	Very flaggy clay loam, very cobbly loam, extremely flaggy clay loam.	GM-GC, GC	A-2	25-50	30-50	25-45	20-40	15-35	25-35	5-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CdE*:											
Checkett--------	0-2	Stony loam-------	CL-ML	A-4	15-20	85-95	80-90	65-85	50-70	25-30	5-10
	2-18	Very cobbly clay loam, extremely cobbly loam, very gravelly clay loam.	GC, GM-GC	A-2	20-60	35-55	30-50	20-40	15-30	20-35	5-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Ce--------------- Cheebe	0-8	Fine sandy loam	ML	A-4	0	100	100	85-95	50-65	20-25	NP-5**
	8-36	Silty clay, clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	35-55	15-35
	36-60	Clay, silty clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	30-55	15-35
Cf--------------- Cheebe	0-8	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	25-40	10-20
	8-36	Silty clay, clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	35-55	15-35
	36-60	Clay, silty clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	30-55	15-35

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CG*. Cumulic Haploxerolls											
DaC---------------- Dagor	0-29	Loam----------------	CL-ML	A-4	0	100	95-100	80-90	60-75	20-30	5-10
	29-49	Loam, fine sandy loam.	CL-ML	A-4	0	100	95-100	80-90	60-75	20-30	5-10
	49-60	Silt loam, very fine sandy loam, loam.	CL-ML	A-4	0	100	100	85-95	75-85	20-30	5-10
DbD---------------- Deer Creek	0-7	Cobbly loam--------	CL-ML	A-4	10-20	75-85	70-80	60-70	50-60	20-30	5-10
	7-35	Gravelly clay, cobbly clay.	CL, CH	A-7	10-30	70-85	65-80	60-75	50-70	40-60	15-30
	35-60	Cobbly clay loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-45	50-70	45-65	40-60	30-50	30-40	10-20
DcD*: Deer Creek--------	0-7	Cobbly loam--------	CL-ML	A-4	10-20	75-85	70-80	60-70	50-60	20-30	5-10
	7-35	Gravelly clay, cobbly clay.	CL, CH	A-7	10-30	70-85	65-80	60-75	50-70	40-60	15-30
	35-60	Cobbly clay loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-45	50-70	45-65	40-60	30-50	30-40	10-20
Borvant----------	0-9	Cobbly loam--------	CL-ML	A-4	25-30	75-85	70-80	60-70	50-60	20-30	5-10
	9-19	Very gravelly loam, very cobbly loam.	GM-GC	A-2, A-4	20-55	35-65	30-60	25-50	20-40	20-30	5-10
	19	Indurated----------	---	---	---	---	---	---	---	---	---
DdC, DdE, DdF----- Donnardo	0-10	Stony loam--------	CL-ML, SM-SC	A-2, A-4	5-15	85-90	80-85	55-75	30-60	20-30	5-10
	10-60	Very stony loam, very cobbly loam, very cobbly fine sandy loam.	GM-GC	A-2	15-40	45-60	40-55	30-50	20-35	20-30	5-10
DeF*: Donnardo----------	0-10	Stony loam--------	CL-ML, SM-SC	A-2, A-4	5-15	85-90	80-85	55-75	30-60	20-30	5-10
	10-60	Very stony loam, very cobbly loam, very cobbly fine sandy loam.	GM-GC	A-2	15-40	45-60	40-55	30-50	20-35	20-30	5-10
	60-65	Very gravelly loam.	GM-GC	A-2	15-25	45-60	40-55	30-50	20-35	20-30	5-10
Hiko Peak--------	0-7	Stony sandy loam	SM-SC, SM	A-1, A-2	15-25	65-95	60-85	35-55	20-30	20-30	NP-10
	7-19	Gravelly sandy loam, very gravelly sandy loam, very gravelly loam.	SM, SM-SC, GM-GC, GM	A-1, A-2, A-4	5-20	35-70	30-65	25-55	10-40	20-30	NP-10
	19-60	Very gravelly sandy loam, very cobbly sandy loam.	SM, SM-SC, GM-GC, GM	A-1, A-2	5-55	35-70	30-60	20-40	10-25	20-30	NP-10

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
DfB, DfC--------- Doyce	0-10	Loam-------------	CL-ML	A-4	0	95-100	90-100	80-95	65-75	20-30	5-10
	10-19	Sandy clay loam, loam, clay loam.	CL-ML, CL	A-4, A-6	0	95-100	90-100	75-90	50-65	25-35	5-15
	19-60	Gravelly loam----	SM-SC, GM-GC, SM, GM	A-4	0-5	60-80	55-75	50-65	40-50	25-35	5-10
DgC-------------- Doyce	0-11	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	80-100	70-90	25-35	5-15
	11-30	Clay loam--------	CL	A-6	0	100	100	80-100	70-85	30-40	10-20
	30-60	Silt loam, loam	CL-ML, CL	A-4, A-6	0	100	100	80-100	70-80	25-35	5-15
DhD-------------- Dry Creek	0-10	Cobbly loam------	GM-GC, SM-SC, CL-ML	A-4	10-40	55-85	50-80	40-75	35-60	20-30	5-10
	10-26	Cobbly clay, cobbly silty clay.	CL, CH	A-7	15-30	65-90	60-85	55-80	50-75	40-55	20-30
	26-60	Very gravelly clay loam, gravelly clay.	GC	A-2, A-6	10-20	50-65	40-55	35-50	25-40	30-40	10-20
DkD*: Dry Creek-------	0-10	Cobbly loam------	GM-GC, SM-SC, CL-ML	A-4	10-40	55-85	50-80	40-75	35-60	20-30	5-10
	10-26	Cobbly clay, cobbly silty clay.	CL, CH	A-7	15-30	65-90	60-85	55-80	50-75	40-55	20-30
	26-60	Very gravelly clay loam, gravelly clay.	GC	A-2, A-6	10-20	50-65	40-55	35-50	25-40	30-40	10-20
Reebok----------	0-5	Cobbly loam------	GM-GC, SM-SC	A-4	15-25	65-80	60-75	50-60	35-50	20-30	5-10
	5-15	Very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	10-50	50-65	40-55	35-50	25-40	25-35	10-15
	15-19	Extremely gravelly loam, very gravelly loam.	GM, GM-GC	A-1, A-2	10-35	30-55	25-50	20-40	15-30	20-30	NP-10
	19	Indurated--------	---	---	---	---	---	---	---	---	---
Dm--------------- Duggins	0-5	Loam-------------	CL-ML	A-4	0	100	100	85-95	60-75	25-35	5-10
	5-60	Clay, silty clay, clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	30-50	15-30
DN*. Dune land											
FaB-------------- Firmage	0-9	Gravelly loam.	SM-SC, SM	A-4	0-10	75-90	70-85	50-65	35-50	20-30	NP-10
	9-60	Cobbly loam, cobbly sandy loam, gravelly loam.	SM-SC, CL-ML	A-4	15-30	75-85	70-80	50-70	35-55	20-30	5-10

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
FbF: Flygare	0-20	Loam	CL-ML, CL	A-4	0-5	90-100	80-90	65-85	50-80	20-30	5-10
	20-31	Cobbly loam, very cobbly loam, cobbly fine sandy loam.	GM-GC, GC	A-2, A-4	30-60	50-70	40-60	35-55	20-40	20-30	5-10
	31-49	Cobbly sandy clay loam, very gravelly clay loam, very cobbly sandy clay loam.	GM-GC, GC, SM-SC, SC	A-2, A-4	25-50	60-75	40-70	35-60	25-50	20-30	5-10
	49-60	Extremely cobbly loam, very gravelly clay loam.	GM-GC, GM, GC	A-1, A-2	30-65	35-60	25-50	15-40	10-35	15-25	NP-10
FcF*: Flygare	0-20	Loam	CL-ML, CL	A-4	0-5	90-100	80-90	65-85	50-80	20-30	5-10
	20-31	Cobbly loam, very cobbly loam, cobbly fine sandy loam.	GM-GC, GC	A-2, A-4	30-60	50-70	40-60	35-55	20-40	20-30	5-10
	31-49	Cobbly sandy clay loam, very gravelly clay loam, very cobbly sandy clay loam.	GM-GC, GC, SM-SC, SC	A-2, A-4	25-50	60-75	40-70	35-60	25-50	20-30	5-10
	49-60	Extremely cobbly loam, very gravelly clay loam.	GM-GC, GM, GC	A-1, A-2	30-65	35-60	25-50	15-40	10-35	15-25	NP-10
Parkay	0-18	Very stony loam	CL-ML, GM-GC, CL, GC	A-4, A-6	20-45	60-85	55-80	45-75	35-60	20-35	5-15
	18-42	Very cobbly loam, very stony clay loam, very cobbly clay loam.	GC, CL	A-6	40-65	60-80	55-75	50-75	45-60	30-40	10-20
	42-47	Extremely cobbly clay loam, very gravelly loam, very gravelly clay loam.	GM-GC, GC	A-2	30-60	30-55	25-50	15-35	10-25	25-35	5-15
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
FdF*: Flygare	0-20	Loam	CL-ML, CL	A-4	0-5	90-100	80-90	65-85	50-80	20-30	5-10
	20-31	Cobbly loam, very cobbly loam, cobbly fine sandy loam.	GM-GC, GC	A-2, A-4	30-60	50-70	40-60	35-55	20-40	20-30	5-10
	31-49	Cobbly sandy clay loam, very gravelly clay loam, very cobbly sandy clay loam.	GM-GC, GC, SM-SC, SC	A-2, A-4	25-50	60-75	40-70	35-60	25-50	20-30	5-10
	49-60	Extremely cobbly loam, very gravelly clay loam.	GM-GC, GM, GC	A-1, A-2	30-65	35-60	25-50	15-40	10-35	15-25	NP-10

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
FdF*:											
Starley----------	0-16	Very cobbly loam	GM-GC	A-2	40-60	50-65	45-60	35-45	25-35	25-35	5-10
	16-19	Very cobbly loam	GM-GC	A-2	40-60	50-65	45-60	35-45	25-35	25-35	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
FeD, FeF---------- Fontreen	0-4	Stony loam-------	GM-GC, SM-SC	A-4	10-20	65-80	60-75	50-60	35-50	25-35	5-10
	4-40	Very cobbly loam, very gravelly loam.	GM-GC	A-2	20-40	45-55	40-50	35-45	25-35	25-35	5-10
	40-60	Very cobbly loam, very stony loam.	GM-GC	A-4	40-50	65-70	55-65	50-60	35-50	25-35	5-10
FfD*:											
Fontreen---------	0-4	Stony loam-------	GM-GC, SM-SC	A-4	10-20	65-80	60-75	50-60	35-50	25-35	5-10
	4-40	Very cobbly loam, very gravelly loam.	GM-GC	A-2	20-40	45-55	40-50	35-45	25-35	25-35	5-10
	40-60	Very cobbly loam, very stony loam.	GM-GC	A-4	40-50	65-70	55-65	50-60	35-50	25-35	5-10
Borvant----------	0-9	Cobbly loam------	CL-ML	A-4	25-30	75-85	70-80	60-70	50-60	20-30	5-10
	9-19	Very gravelly loam, very cobbly loam.	GM-GC	A-2, A-4	20-55	35-65	30-60	25-50	20-40	20-30	5-10
	19	Indurated--------	---	---	---	---	---	---	---	---	---
FgB-------------- Freedom	0-8	Silt loam--------	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
	8-40	Silty clay loam, silt loam.	CL	A-6	0	100	100	95-100	75-90	25-40	10-20
	40-60	Silty clay, silty clay loam.	CL-ML, CL	A-4, A-6	0	85-100	80-100	60-95	50-80	20-40	5-15
FgC-------------- Freedom	0-8	Silt loam--------	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
	8-40	Silty clay loam, silt loam, silty clay.	CL	A-6	0	100	100	95-100	75-90	25-40	10-20
	40-60	Silty clay loam, silty clay.	CL-ML, CL	A-4, A-6	0	85-100	80-100	60-95	50-80	20-40	5-15
FhB-------------- Fridlo	0-8	Loam-------------	CL-ML, CL	A-4, A-6	0	100	100	85-95	60-75	25-35	5-15
	8-24	Silt loam, silty clay loam, clay loam.	CL	A-6	0	100	100	95-100	80-95	25-40	10-20
	24-60	Loam, silt loam	CL, CL-ML	A-4, A-6	0	100	100	85-100	65-90	25-35	5-15
GaBP------------- Genola	0-6	Fine sandy loam	SM, SM-SC, CL-ML, ML	A-4	0	100	100	70-85	40-55	15-25	NP-10
	6-60	Silt loam, loam	CL-ML	A-4	0	100	100	85-100	75-90	20-30	5-10
GbA, GbB, GbC, GcA, GcB, GcC--- Genola	0-6	Silt loam--------	CL-ML, ML	A-4	0	100	100	85-100	75-90	20-30	NP-10
	6-60	Silt loam, loam	CL-ML	A-4	0	100	100	85-100	75-90	20-30	5-10
GdDP------------- Goldrun	0-2	Loamy fine sand	SM	A-2	0	100	100	65-80	15-35	---	NP
	2-60	Fine sand, loamy fine sand.	SM	A-2	0	100	100	65-80	10-20	---	NP
GeD*:											
Goldrun----------	0-2	Loamy fine sand	SM	A-2	0	100	100	65-80	15-35	---	NP
	2-60	Fine sand, loamy fine sand.	SM	A-2	0	100	100	65-80	10-20	---	NP

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
GeD*:											
Cheebe	0-8	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	25-40	10-20
	8-36	Silty clay, clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	35-55	15-35
	36-60	Clay, silty clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	30-55	15-35
GfD*:											
Goldrun	0-2	Loamy fine sand	SM	A-2	0	100	100	65-80	15-35	---	NP
	2-60	Fine sand, loamy fine sand.	SM	A-2	0	100	100	65-80	10-20	---	NP
Medburn	0-8	Fine sandy loam	SM, ML	A-4	0	100	100	60-85	35-55	20-25	NP-5
	8-32	Fine sandy loam	SM, ML	A-4	0-10	90-100	80-100	55-85	35-55	20-25	NP-5
	32-60	Loam, fine sandy loam, gravelly sandy loam.	SM, ML	A-2, A-4	0-10	75-100	70-100	50-70	30-60	20-25	NP-5
GgD*:											
Goldrun	0-2	Loamy fine sand	SM	A-2	0	100	100	65-80	15-35	---	NP
	2-60	Fine sand, loamy fine sand.	SM	A-2	0	100	100	65-80	10-20	---	NP
Rock outcrop.											
HaF Hamtah	0-8	Loam	CL, CL-ML	A-6, A-4	0-15	80-100	75-100	60-90	50-75	25-35	5-15
	8-20	Cobbly loam, very cobbly loam.	CL, CL-ML, GC, GM-GC	A-6, A-4	15-45	60-95	55-90	45-85	35-70	25-35	5-15
	20-28	Very cobbly clay loam.	CL, ML	A-6, A-7	55-65	70-80	65-75	60-75	50-60	35-45	10-20
	28-60	Very cobbly clay, very gravelly clay.	CL, CH, GC	A-7	40-65	50-75	45-70	40-70	35-60	45-60	20-35
HbA, HbB Hansel	0-6	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	25-35	5-15
	6-21	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	90-100	25-40	5-20
	21-60	Silt loam, loam	CL-ML	A-4	0	100	100	85-100	60-90	20-25	5-10
Hc Harding	0-4	Silt loam	CL-ML	A-4	0	100	100	95-100	80-90	20-30	5-10
	4-30	Silty clay, clay, silty clay loam.	CL	A-6, A-7	0	100	100	95-100	85-95	35-50	15-25
	30-60	Silty clay, silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	90-100	80-95	30-50	10-25
HdC, HdD, HdE Hiko Peak	0-7	Stony sandy loam	SM-SC, SM	A-1, A-2	15-25	65-95	60-85	35-55	20-30	20-30	NP-10
	7-19	Gravelly sandy loam, very gravelly sandy loam, very gravelly loam.	SM, SM-SC, GM-GC, GM	A-1, A-2, A-4	5-20	35-70	30-65	25-55	10-40	20-30	NP-10
	19-60	Very gravelly sandy loam, very cobbly sandy loam.	SM, SM-SC, GM-GC, GM	A-1, A-2	5-55	35-70	30-60	20-40	10-25	20-30	NP-10
HeC Hillfield	0-5	Silt loam	CL-ML	A-4	0	100	95-100	90-100	75-90	20-30	5-10
	5-60	Silt loam, very fine sandy loam.	CL-ML, CL	A-4, A-6	0	100	95-100	80-95	50-75	20-40	5-15
HfC, HfD Hupp	0-14	Gravelly loam	SM-SC, GM-GC	A-4	0-10	60-75	55-70	45-65	35-50	25-30	5-10
	14-60	Very gravelly loam, very cobbly loam.	GM-GC, GC, SM-SC, SC	A-2, A-4, A-6	25-40	40-70	35-65	30-60	20-50	20-35	5-15

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
JaD--------------- Jericho	0-5	Gravelly fine sandy loam.	GM, GM-GC, SM, SM-SC	A-2, A-4	0-15	55-80	50-75	40-60	20-40	20-30	NP-10
	5-9	Gravelly fine sandy loam, gravelly coarse sandy loam.	GM, GM-GC, SM, SM-SC	A-2, A-4, A-1	0-15	55-80	50-75	35-65	20-40	20-30	NP-10
	9-19	Very gravelly fine sandy loam, very gravelly coarse sandy loam.	GM, GM-GC	A-2, A-1	15-25	40-65	35-60	25-50	15-30	20-30	NP-10
	19	Indurated---------	---	---	---	---	---	---	---	---	---
JbA, JbB, JbC----- Juab	0-13	Loam--------------	CL-ML, ML	A-4	0	85-100	80-100	65-95	50-75	25-35	5-10
	13-38	Loam, silt loam	CL-ML, ML	A-4	0	85-100	80-100	65-95	50-85	25-35	5-10
	38-60	Loam, silt loam, silty clay loam.	CL-ML, ML	A-4	0	85-100	80-100	65-95	50-85	25-35	5-10
JcB, JcC---------- Juab	0-13	Loam--------------	CL-ML	A-4	0	85-100	80-100	65-95	50-75	20-30	5-10
	13-29	Loam--------------	CL-ML	A-4	0	85-100	80-100	65-95	50-75	20-30	5-10
	29-40	Gravelly loam-----	GM-GC, CL-ML, SM-SC	A-2, A-4	0	55-80	50-75	45-70	30-55	20-30	5-10
	40-60	Very gravelly fine sandy loam.	GM	A-1	0	40-60	35-50	30-45	10-25	20-25	NP-5
JdC*:											
Juab-------------	0-13	Loam--------------	CL-ML, ML	A-4	0	85-100	80-100	65-95	50-75	25-35	5-10
	13-38	Loam, silt loam	CL-ML, ML	A-4	0	85-100	80-100	65-95	50-85	25-35	5-10
	38-60	Loam, silt loam, silty clay loam.	CL-ML, ML	A-4	0	85-100	80-100	65-95	50-85	25-35	5-10
Juab, gravelly substratum------	0-13	Loam--------------	CL-ML	A-4	0	85-100	80-100	65-95	50-75	20-30	5-10
	13-29	Loam--------------	CL-ML	A-4	0	85-100	80-100	65-95	50-75	20-30	5-10
	29-40	Gravelly loam-----	GM-GC, CL-ML, SM-SC	A-2, A-4	0	55-80	50-75	45-70	30-55	20-30	5-10
	40-60	Very gravelly fine sandy loam.	GM	A-1	0	40-60	35-50	30-45	10-25	20-25	NP-5
JeD--------------- Justesen	0-14	Loam--------------	ML	A-4	0	100	100	85-95	60-75	25-35	NP-10
	14-34	Silty clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	80-95	65-90	25-35	5-15
	34-51	Silty clay loam, clay loam, stony loam.	CL-ML, CL	A-4, A-6	0-25	95-100	90-100	80-95	60-90	25-40	5-20
	51-60	Loam, stony loam, silty clay loam.	CL-ML, CL	A-4, A-6	0-25	95-100	90-100	75-95	55-90	25-35	5-15
KaB--------------- Keigley	0-8	Silt loam---------	CL-ML, ML	A-4	0	100	100	95-100	85-90	25-35	5-10
	8-60	Silty clay loam, clay loam.	CL	A-6	0	100	100	95-100	90-95	30-40	10-20
Kb---------------- Kirkham	0-13	Silt loam---------	CL-ML	A-4	0	100	100	90-95	80-90	20-30	5-10
	13-40	Silty clay loam, silt loam, clay loam.	CL	A-6	0	100	100	90-100	80-95	25-40	10-20
	40-60	Silty clay loam, silty clay.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	35-45	10-25

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
KcF*:											
Kitchell	0-10	Cobbly loam	CL-ML	A-4	15-30	65-85	60-80	55-70	50-60	20-30	5-10
	10-60	Very cobbly clay loam, very stony loam, extremely stony loam.	GM-GC	A-2, A-4	25-50	40-65	35-60	30-55	25-45	20-30	5-10
Rock outcrop.											
LaA, LaB, LaC Linoyer	0-5	Very fine sandy loam.	ML	A-4	0	100	100	95-100	55-70	15-25	NP-5
	5-60	Very fine sandy loam, silt loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	15-30	NP-10
LaD2 Linoyer	0-2	Very fine sandy loam.	ML	A-4	0	100	100	95-100	55-70	15-25	NP-5
	2-60	Very fine sandy loam, silt loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	15-30	NP-10
LbE Lizzant	0-9	Very cobbly loam	GM-GC	A-2, A-4	30-60	55-65	50-60	40-50	30-40	15-25	5-10
	9-60	Cobbly loam, very cobbly loam.	GM-GC, SM-SC	A-4	20-50	65-75	60-70	50-60	35-50	15-25	5-10
LbF, LcF Lizzant	0-9	Very cobbly loam	GM-GC	A-2, A-4	30-60	55-65	50-60	40-50	30-40	15-25	5-10
	9-60	Cobbly loam, very cobbly loam.	GM-GC, SM-SC	A-4	20-50	65-75	60-70	50-60	35-50	15-25	5-10
LdE*, LdF*:											
Lodar	0-10	Very cobbly loam	GM-GC	A-2, A-4	15-50	40-60	35-55	30-50	25-40	20-30	5-10
	10-15	Very cobbly loam, very stony loam, very gravelly loam.	GM-GC	A-2, A-4	15-50	40-60	35-55	30-50	25-40	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
LeF*:											
Lundy	0-6	Very cobbly loam	GM-GC	A-2, A-4	25-50	50-65	45-60	35-55	25-45	20-30	5-10
	6-19	Very flaggy clay loam, very cobbly loam, extremely flaggy clay loam.	GM-GC, GC	A-2	25-50	30-50	25-45	20-40	15-35	25-35	5-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
MaB Manassa	0-15	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-95	20-40	5-20
	15-60	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	85-95	25-40	5-20
MbC2 Manassa	0-5	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-95	20-40	5-20
	5-60	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	85-95	25-40	5-20
McB Manassa	0-15	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-95	20-40	5-20
	15-60	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	85-95	25-40	5-20
MdB*:											
Manassa	0-15	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-95	20-40	5-20
	15-60	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	85-95	25-40	5-20

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
MdB*:											
Mellor----------	0-7	Silt loam--------	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
	7-60	Silty clay loam	CL	A-6	0	100	100	95-100	80-95	30-40	10-20
MeC, MeD--------- Manila	0-7	Loam-------------	CL-ML, CL	A-4, A-6	0	95-100	90-100	85-95	70-90	25-35	5-15
	7-43	Clay, silty clay, clay loam.	CL, CH	A-7	0-5	100	95-100	85-100	75-90	40-60	15-30
	43-60	Gravelly loam, gravelly clay loam.	CL, CL-ML, GC, GM-GC	A-4, A-6	0-10	65-75	60-75	50-70	40-65	25-40	5-15
MfA, MfB--------- Medburn	0-8	Fine sandy loam	SM, ML	A-4	0	100	100	60-85	35-55	20-25	NP-5
	8-32	Fine sandy loam	SM, ML	A-4	0-10	90-100	80-100	55-85	35-55	20-25	NP-5
	32-60	Loam, fine sandy loam, gravelly sandy loam.	SM, ML	A-2, A-4	0-30	75-100	70-100	50-70	30-60	20-25	NP-5
Mg--------------- Mellor	0-7	Silt loam--------	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
	7-20	Silty clay loam	CL	A-6	0	100	100	95-100	80-95	30-40	10-20
	20-60	Silty clay loam, silt loam, silty clay.	CL	A-6, A-7	0	100	100	95-100	75-95	25-45	10-25
Mh--------------- Mellor	0-2	Silt loam--------	CL-ML	A-4	0	100	100	90-100	70-90	20-30	5-10
	2-20	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	30-40	10-15
	20-36	Silt loam, silty clay loam.	CL-ML, ML	A-4	0	100	100	90-100	80-90	25-35	5-10
	36-60	Fine sandy loam	ML, SM	A-4	0	100	100	70-85	40-55	20-25	NP-5
MkC-------------- Modoc	0-4	Fine sandy loam	SM, ML	A-4	0-5	100	100	70-85	40-55	15-25	NP-5
	4-16	Clay loam--------	CL	A-6	0	100	100	90-100	70-80	30-35	10-15
	16-39	Fine sandy loam	SM	A-2, A-4	0	100	100	60-85	30-40	15-25	NP-5
	39-40	Indurated--------	---	---	---	---	---	---	---	---	---
Mm--------------- Moroni	0-7	Silty clay loam	CL, CH	A-7	0	100	100	95-100	85-95	40-60	15-30
	7-60	Silty clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	95-100	85-95	35-60	15-30
MnF-------------- Mortenson	0-12	Silt loam--------	CL-ML	A-4	0-10	95-100	90-100	80-95	75-90	20-30	5-10
	12-31	Very stony silt loam, very stony loam.	GM-GC	A-2, A-4	30-50	45-65	40-60	35-55	30-50	20-30	5-10
	31-60	Very stony clay, very cobbly clay.	GC, CL	A-2, A-6, A-7	25-50	35-75	30-70	25-65	20-60	35-50	15-25
MoC-------------- Mountainville	0-10	Very stony sandy loam.	SM	A-1, A-2	30-50	65-95	60-90	40-60	20-35	15-25	NP-5
	10-29	Very stony sandy clay loam, very stony loam, extremely stony clay loam.	SM-SC, SC, CL-ML, CL	A-4, A-6	40-65	60-95	50-75	40-70	35-60	25-35	5-15
	29-60	Very cobbly loam, very gravelly sandy loam, very gravelly sandy clay loam.	GM, GM-GC	A-1, A-2, A-4	0-55	35-55	30-50	25-45	15-40	20-30	NP-10

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
MpB-------------- Mountainville	0-7	Gravelly loam----	CL-ML, CL	A-4, A-6	0-5	70-80	65-75	60-70	50-65	20-35	5-15
	7-17	Very cobbly clay loam.	GC	A-6	20-30	50-65	45-60	40-55	35-50	30-40	10-15
	17-60	Extremely cobbly sandy loam, very cobbly loamy sand, very gravelly loamy sand.	GP-GM, GM	A-1	20-55	30-55	25-50	15-20	5-15	---	NP
MrB*:											
Mountainville---	0-7	Gravelly loam----	CL-ML, CL	A-4, A-6	0-5	70-80	65-75	60-70	50-65	20-35	5-15
	7-17	Very cobbly clay loam.	GC	A-6	20-30	50-65	45-60	40-55	35-50	30-40	10-15
	17-60	Extremely cobbly sandy loam, very cobbly loamy sand, very gravelly loamy sand.	GP-GM, GM	A-1	20-55	30-55	25-50	15-20	5-15	---	NP
Doyce-----------	0-10	Loam-------------	CL-ML	A-4	0	95-100	90-100	80-95	65-75	20-30	5-10
	10-19	Sandy clay loam, loam, clay loam.	CL-ML, CL	A-4, A-6	0	95-100	90-100	75-90	50-65	25-35	5-15
	19-60	Gravelly loam----	SM-SC, GM-GC, SM, GM	A-4	0-5	60-80	55-75	50-65	40-50	25-35	5-10
MsD-------------- Mower	0-11	Clay loam--------	CL	A-6	0	95-100	85-95	80-95	80-90	30-40	10-20
	11-19	Silty clay loam	CL	A-6	0	100	95-100	90-100	80-95	30-40	10-20
	19-38	Shaly silty clay loam.	GC	A-6	0-5	60-70	50-60	45-55	40-50	30-40	10-20
	38	Weathered bedrock	---	---	---	---	---	---	---	---	---
MtF*:											
Mower-----------	0-11	Stony clay loam	CL	A-6	10-20	90-100	85-95	75-90	60-80	25-35	10-15
	11-19	Silty clay loam	CL	A-6	0	100	95-100	90-100	80-95	30-40	10-20
	19-38	Shaly silty clay loam.	GC	A-6	0-5	60-70	50-60	45-55	40-50	30-40	10-20
	38	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
MuB, MuC--------- Musinia	0-7	Silt loam--------	CL-ML	A-4	0	100	100	90-100	70-90	25-30	5-10
	7-60	Silty clay loam, silt loam, loam.	CL, CL-ML	A-4, A-6	0	100	100	85-100	80-90	25-35	5-15
MvB, MvC--------- Musinia	0-7	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	25-35	10-15
	7-60	Silty clay loam, silt loam, loam.	CL, CL-ML	A-4, A-6	0	100	100	85-100	80-90	25-35	5-15
NaB-------------- Nephi	0-9	Silt loam--------	CL-ML, ML	A-4	0	100	100	90-100	70-90	25-35	5-10
	9-23	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	30-40	10-15
	23-42	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	30-40	10-15
	42-60	Silt loam, loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	85-100	60-95	25-35	5-15

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
OaD, OaE--------- Orcky	0-3	Gravelly fine sandy loam.	SM, GM	A-2, A-4, A-1	0	55-80	50-75	35-65	20-40	20-25	NP-5
	3-17	Gravelly fine sandy loam, gravelly loam.	SM-SC, GM-GC	A-2, A-4	0	55-80	50-75	35-65	20-40	20-30	5-10
	17-60	Extremely gravelly sand, extremely gravelly loamy sand, very gravelly loamy sand.	GP, GP-GM	A-1	0-20	20-35	15-30	10-25	0-10	---	NP
PA*. Pachic Calcixerolls											
PB*. Pachic Haploxerolls											
PC*, PD*. Pachic Cryoborolls											
PeD*, PeF*: Parkay-----------	0-18	Very stony loam	CL-ML, GM-GC, CL, GC	A-4, A-6	20-45	60-85	55-80	45-75	35-60	20-35	5-15
	18-42	Very cobbly loam, very stony clay loam, very cobbly clay loam.	GC, CL	A-6	40-65	60-80	55-75	50-75	45-60	30-40	10-20
	42-47	Extremely cobbly clay loam, very gravelly loam, extremely gravelly clay loam.	GM-GC, GC	A-2	30-60	30-55	25-50	15-35	10-25	25-35	5-15
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
PfA, PfB, PfC---- Parleys	0-11	Loam-------------	CL-ML	A-4	0	95-100	95-100	80-95	60-85	20-30	5-10
	11-19	Silty clay loam	ML, CL	A-6, A-7	0	100	95-100	85-100	75-95	35-45	10-20
	19-60	Silt loam, fine sandy loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	70-95	50-95	25-35	5-15
PgC-------------- Pharo	0-8	Very stony loam	GM-GC, SM-SC	A-2, A-4	25-35	60-70	55-65	45-60	30-50	20-30	5-10
	8-18	Very cobbly loam	GM-GC	A-2, A-4	25-35	50-60	45-55	35-50	25-40	20-30	5-10
	18-60	Very gravelly loam, very gravelly sandy loam.	GM, GM-GC	A-1, A-2	10-20	35-45	30-40	20-40	10-30	15-25	NP-10
PhD-------------- Pibler	0-4	Gravelly fine sandy loam.	SM-SC, GM-GC	A-4, A-2	5-25	65-90	60-85	45-65	30-45	25-30	5-10
	4-16	Very gravelly loam, very cobbly loam.	GM-GC, SM-SC	A-4, A-2	5-45	40-75	35-70	30-65	25-45	25-30	5-10
	16	Indurated--------	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
PK*: Pits.											
Dumps.											
PmD---------------- Pober	0-4	Fine sandy loam	SM, SM-SC	A-4, A-2	0-5	85-100	80-95	60-75	30-50	20-30	NP-10
	4-13	Gravelly loam, fine sandy loam, loam.	SM-SC, CL-ML, GM-GC	A-4, A-2	0-15	65-100	60-95	45-85	25-70	25-30	5-10
	13-26	Very gravelly loam, very gravelly sandy loam.	GM-GC, SM-SC	A-1, A-2, A-4	5-20	45-65	40-60	25-55	10-40	25-30	5-10
	26	Indurated--------	---	---	---	---	---	---	---	---	---
PnD*: Pober------------	0-4	Fine sandy loam	SM, SM-SC	A-4, A-2	0-5	85-100	80-95	60-75	30-50	20-30	NP-10
	4-13	Gravelly loam, fine sandy loam, loam.	SM-SC, CL-ML, GM-GC	A-4, A-2	0-15	65-100	60-95	45-85	25-70	25-30	5-10
	13-26	Very gravelly loam, very gravelly sandy loam.	GM-GC, SM-SC	A-1, A-2, A-4	5-20	45-65	40-60	25-55	10-40	25-30	5-10
	26	Indurated--------	---	---	---	---	---	---	---	---	---
PnD*: Pibler-----------	0-4	Gravelly fine sandy loam.	SM-SC, GM-GC	A-4, A-2	5-25	65-90	60-85	45-65	30-45	25-30	5-10
	4-16	Very gravelly loam, very cobbly loam.	GM-GC, SM-SC	A-4, A-2	5-45	40-75	35-70	30-65	25-45	25-30	5-10
	16	Indurated--------	---	---	---	---	---	---	---	---	---
Po----------------- Provo Bay	0-15	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	90-100	75-95	25-35	5-15
	15-60	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	30-40	10-20
Pp*: Provo Bay--------	0-15	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	90-100	75-95	25-35	5-15
	15-60	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	30-40	10-20
Cheebe-----------	0-8	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	25-40	10-20
	8-36	Silty clay, clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	35-55	15-35
	36-60	Clay, silty clay, silty clay loam.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	30-55	15-35
RaD, RaE---------- Reebok	0-5	Cobbly loam------	GM-GC, SM-SC	A-4	15-25	65-80	60-75	50-60	35-50	20-30	5-10
	5-15	Very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	10-50	50-65	40-55	35-50	25-40	25-35	10-15
	15-19	Extremely gravelly loam, very gravelly loam.	GM, GM-GC	A-1, A-2	10-35	30-55	25-50	20-40	15-30	20-30	NP-10
	19	Indurated--------	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
RbC: Renol	0-9	Stony fine sandy loam.	GM, GM-GC, SM, SM-SC	A-2, A-4	15-45	65-85	60-80	45-65	25-50	15-30	NP-10
	9-17	Very gravelly clay loam, extremely gravelly clay loam, very cobbly clay loam.	GC	A-6, A-7, A-2	15-30	35-65	30-60	25-60	20-50	30-45	10-20
	17-27	Extremely gravelly clay loam, very gravelly clay loam, very gravelly loam.	GC	A-6, A-7, A-2	5-15	35-60	30-55	25-55	20-45	30-45	10-20
	27	Indurated	---	---	---	---	---	---	---	---	---
RcD*: Renol	0-9	Stony fine sandy loam.	GM, GM-GC, SM, SM-SC	A-2, A-4	15-45	65-85	60-80	45-65	25-50	15-30	NP-10
	9-17	Very gravelly clay loam, extremely gravelly clay loam, very cobbly clay loam.	GC	A-6, A-7, A-2	15-30	35-65	30-60	25-60	20-50	30-45	10-20
	17-27	Extremely gravelly clay loam, very gravelly clay loam, very gravelly loam.	GC	A-6, A-7, A-2	5-15	35-60	30-55	25-55	20-45	30-45	10-20
	27	Indurated	---	---	---	---	---	---	---	---	---
Reebok	0-5	Cobbly loam	GM-GC, SM-SC	A-4	15-25	65-80	60-75	50-60	35-50	20-30	5-10
	5-15	Very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	10-50	50-65	40-55	35-50	25-40	25-35	10-15
	15-19	Extremely gravelly loam, very gravelly loam.	GM, GM-GC	A-1, A-2	10-35	30-55	25-50	20-40	15-30	20-30	NP-10
	19	Indurated	---	---	---	---	---	---	---	---	---
RdE*: Reywat	0-5	Very stony loam	GM-GC, SM-SC	A-4, A-2	20-35	50-80	45-70	35-60	30-50	20-30	5-10
	5-9	Cobbly clay loam	CL	A-6	15-20	75-85	70-80	65-75	50-65	30-40	10-15
	9-17	Very cobbly clay loam, very stony clay loam, extremely stony clay loam.	GC, CL	A-6, A-2	30-50	55-85	50-80	45-75	35-55	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
RdE*:											
Reebok----------	0-5	Cobbly loam------	GM-GC, SM-SC	A-4	15-25	65-80	60-75	50-60	35-50	20-30	5-10
	5-15	Very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	10-50	50-65	40-55	35-50	25-40	25-35	10-15
	15-19	Extremely gravelly loam, very gravelly loam.	GM, GM-GC	A-1, A-2	10-35	30-55	25-50	20-40	15-30	20-30	NP-10
	19	Indurated--------	---	---	---	---	---	---	---	---	---
Rock outcrop.											
ReE*, ReF*:											
Reywat----------	0-5	Very stony loam	GM-GC, SM-SC	A-4, A-2	20-35	50-80	45-70	35-60	30-50	20-30	5-10
	5-9	Cobbly clay loam	CL	A-6	15-20	75-85	70-80	65-75	50-65	30-40	10-15
	9-17	Very cobbly clay loam, very stony clay loam, extremely stony clay loam.	GC, CL	A-6, A-2	30-50	55-85	50-80	45-75	35-55	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
RF*. Rock outcrop											
RgF*:											
Rock outcrop.											
Amtoft----------	0-5	Stony loam-------	SM-SC, GM-GC, CL-ML	A-4, A-2	5-25	60-85	55-80	40-75	30-60	20-25	5-10
	5-19	Very flaggy loam, very cobbly loam, very gravelly fine sandy loam.	GM-GC	A-2	30-60	25-40	20-35	15-30	10-25	20-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
RhF*:											
Rock outcrop.											
Lodar-----------	0-10	Very cobbly loam	GM-GC	A-2, A-4	15-50	40-60	35-55	30-50	25-40	20-30	5-10
	10-15	Very cobbly loam, very stony loam, very gravelly loam.	GM-GC	A-2, A-4	15-50	40-60	35-55	30-50	25-40	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
RkF*:											
Rock outcrop.											

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
RkF*:											
Lundy	0-6	Very cobbly loam	GM-GC	A-2, A-4	25-50	50-65	45-60	35-55	25-45	20-30	5-10
	6-19	Very flaggy clay loam, very cobbly loam, extremely flaggy clay loam.	GM-GC, GC	A-2	25-50	30-50	25-45	20-40	15-35	25-35	5-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
RmF*:											
Rock outcrop.											
Saxby	0-6	Very cobbly loam	GM-GC, SM-SC	A-4, A-2	20-40	60-75	50-70	40-60	30-50	25-30	5-10
	6-18	Extremely cobbly loam.	GM-GC	A-2	45-60	30-50	20-40	20-40	15-30	25-30	5-10
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
RnF*:											
Rock outcrop.											
Sheep Creek	0-8	Very cobbly loam	GM-GC	A-2, A-4	20-30	50-65	45-60	40-55	30-45	25-30	5-10
	8-17	Very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-30	50-60	45-55	40-50	30-40	30-35	10-15
	17-28	Very gravelly sandy loam, extremely gravelly sandy loam.	GM, GM-GC, GP-GM	A-2, A-1	10-30	35-50	30-45	15-30	10-15	20-30	NP-10
	28	Unweathered bedrock	---	---	---	---	---	---	---	---	---
RoF*:											
Rock outcrop.											
Wallsburg	0-10	Very cobbly loam	GC, GM-GC	A-2	30-60	45-60	40-55	35-50	25-35	20-30	5-15
	10-19	Very gravelly clay loam, very gravelly clay.	GC	A-6, A-2, A-7	10-20	50-65	40-55	35-50	30-45	30-45	10-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
RpD Rofiss	0-7	Gravelly clay loam.	GM-GC	A-4	0-15	55-70	50-65	45-65	35-50	25-30	5-10
	7-60	Very gravelly clay loam, extremely gravelly clay loam.	GM-GC	A-2	0	20-60	20-50	15-45	15-35	25-30	5-10
Rr Roshe Springs	0-9	Silt loam	CL-ML	A-4	0	100	100	90-95	75-85	20-30	5-10
	9-60	Silt loam, loam	CL-ML	A-4	0	100	100	90-95	75-85	20-30	5-10
RS*. Rubble land											
Sa Saltair	0-7	Silt loam	CL	A-6	0	100	100	90-100	75-95	30-40	10-20
	7-60	Silty clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	100	100	90-100	75-95	20-40	5-20

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
SbF--------------- Sandall	0-5	Very cobbly loam	CL-ML, CL	A-4, A-6	20-30	70-85	60-85	55-80	50-70	25-35	5-15
	5-32	Very cobbly loam, very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	25-55	45-75	40-60	35-55	30-50	25-35	5-15
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
ScD, ScF--------- Sanpete	0-6	Gravelly fine sandy loam.	GM, SM	A-2, A-4	0-5	60-75	55-70	40-55	25-40	15-25	NP-5
	6-60	Very gravelly sandy loam, very gravelly fine sandy loam.	GM	A-1	5-15	30-45	25-40	15-30	10-15	15-25	NP-5
SdE*, SdF*, SeB*, SeF*:											
Saxby-----------	0-6	Very cobbly loam	GM-GC, SM-SC	A-4, A-2	20-40	60-75	50-70	40-60	30-50	25-30	5-10
	6-18	Extremely cobbly loam.	GM-GC	A-2	45-60	30-50	20-40	20-40	15-30	25-30	5-10
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
SfC, SfD, SfE, SgC-------------- Shabliss	0-15	Very fine sandy loam.	ML	A-4	0-5	95-100	95-100	85-95	60-75	<25	NP-5
	15-40	Cemented---------	---	---	---	---	---	---	---	---	---
	40-60	Very fine sandy loam, loam.	SM, ML	A-4	0-5	95-100	90-95	70-90	45-70	20-30	NP-10
ShE, ShF, SkF---- Sheep Creek	0-8	Very cobbly loam	GM-GC	A-2, A-4	20-30	50-65	45-60	40-55	30-45	25-30	5-10
	8-17	Very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-30	50-60	45-55	40-50	30-40	30-35	10-15
	17-28	Very gravelly sandy loam, extremely gravelly sandy loam.	GM, GM-GC, GP-GM	A-2, A-1	10-30	35-50	30-45	15-30	10-15	20-30	NP-10
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
SmE*:											
Sheep Creek-----	0-8	Very cobbly loam	GM-GC	A-2, A-4	20-30	50-65	45-60	40-55	30-45	25-30	5-10
	8-17	Very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-30	50-60	45-55	40-50	30-40	30-35	10-15
	17-28	Very gravelly sandy loam, extremely gravelly sandy loam.	GM, GM-GC, GP-GM	A-2, A-1	10-30	35-60	30-45	15-30	10-15	20-30	NP-10
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SmE*: Flygare	0-20	Loam	CL-ML, CL	A-4	0-5	90-100	80-90	65-85	50-80	20-30	5-10
	20-31	Cobbly loam, very cobbly loam, cobbly fine sandy loam.	GM-GC, GC	A-2, A-4	30-60	50-70	40-60	35-55	20-40	20-30	5-10
	31-49	Cobbly sandy clay loam, very gravelly clay loam, very cobbly sandy clay loam.	GM-GC, GC, SM-SC, SC	A-2, A-4	25-50	60-75	40-70	35-60	25-50	20-30	5-10
	49-60	Extremely cobbly loam, very gravelly clay loam.	GM-GC, GM, GC	A-1, A-2	30-65	35-60	25-50	15-40	10-35	15-25	NP-10
SN*: Slickens											
SoD: Spager	0-4	Gravelly loam	GM-GC	A-4	0-10	65-75	60-70	50-60	40-50	20-30	5-10
	4-17	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GM	A-1, A-2, A-4	0-15	35-55	30-50	25-45	15-40	20-30	NP-10
	17	Indurated	---	---	---	---	---	---	---	---	---
SpE*, SpF*: Starley	0-16	Very cobbly loam	GM-GC	A-2	40-60	50-65	45-60	35-45	25-35	25-35	5-10
	16-19	Very cobbly loam	GM-GC	A-2	40-60	50-65	45-60	35-45	25-35	25-35	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
SrE: Sumine	0-2	Very cobbly loam	GM-GC	A-2, A-4	30-55	55-65	50-60	40-55	30-45	25-35	5-10
	2-26	Very gravelly clay loam, very cobbly clay loam, very cobbly loam.	CL, SC, GC	A-6, A-7	30-75	70-80	65-75	55-70	40-65	30-45	10-20
	26	Weathered bedrock	---	---	---	---	---	---	---	---	---
SsE*, SsF*: Sumine	0-2	Very cobbly loam	GM-GC	A-2, A-4	30-55	55-65	50-60	40-55	30-45	25-35	5-10
	2-26	Very gravelly clay loam, very cobbly clay loam, very cobbly loam.	CL, SC, GC	A-6, A-7	30-75	70-80	65-75	55-70	40-65	30-45	10-20
	26	Weathered bedrock	---	---	---	---	---	---	---	---	---
SsE*, SsF*: Reywat	0-5	Very stony loam	GM-GC, SM-SC	A-4, A-2	20-35	50-80	45-70	35-60	30-50	20-30	5-10
	5-9	Cobbly clay loam	CL	A-6	15-20	75-85	70-80	65-75	50-65	30-40	10-15
	9-17	Very cobbly clay loam, very stony clay loam, extremely stony clay loam.	GC, CL	A-6, A-2	30-50	55-85	50-80	45-75	35-55	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
TaA, TaB, TaC----	0-13	Silt loam--------	CL, CL-ML	A-4, A-6	0	100	100	90-100	70-90	25-35	5-15
Taylorsville	13-60	Silty clay loam	CL	A-6	0	100	100	95-100	90-95	30-40	10-20
TbB--------------	0-10	Silt loam--------	CL, CL-ML	A-4, A-6	0	100	100	90-100	85-95	25-35	5-15
Thiokol	10-23	Silt loam	CL, CL-ML	A-4, A-6	0	100	100	95-100	90-95	25-35	5-15
	23-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	100	100	95-100	90-95	25-35	5-15
TcC*:											
Thiokol---------	0-10	Silt loam--------	CL, CL-ML	A-4, A-6	0	100	100	90-100	85-95	25-35	5-15
	10-23	Silt loam	CL, CL-ML	A-4, A-6	0	100	100	95-100	90-95	25-35	5-15
	23-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	100	100	95-100	90-95	25-35	5-15
Linoyer---------	0-7	Very fine sandy loam.	ML	A-4	0	100	100	95-100	55-70	15-25	NP-5
	7-60	Very fine sandy loam, silt loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	15-30	NP-10
TdB--------------	0-3	Fine sandy loam	SM	A-2, A-4	0	100	90-100	70-80	30-50	15-20	NP-5
Truesdale	3-25	Fine sandy loam	SM	A-2, A-4	0	100	90-100	70-80	30-50	15-20	NP-5
	25-46	Cemented---------	---	---	---	---	---	---	---	---	---
	46-60	Loam, fine sandy loam.	SM	A-2, A-4	0	100	85-100	65-80	30-45	15-20	NP-5
TE*. Typic Cryoborolls											
TF*. Typic Haploborolls											
WaB, WbB---------	0-13	Loam-------------	CL-ML	A-4	0	95-100	90-100	75-95	60-75	20-30	5-10
Wales	13-60	Loam-------------	SM-SC, CL-ML	A-4	0	85-100	80-100	60-80	40-60	20-30	5-10
WcF*:											
Wallsburg-------	0-10	Very cobbly loam	GC, GM-GC	A-2	30-60	45-60	40-55	35-50	25-35	20-30	5-15
	10-19	Very gravelly clay loam, very gravelly clay.	GC	A-6, A-2, A-7	10-20	50-65	40-55	35-50	30-45	30-45	10-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
WdE*, WdF*:											
Wallsburg-------	0-10	Very cobbly loam	GC, GM-GC	A-2	30-60	45-60	40-55	35-50	25-35	20-30	5-15
	10-19	Very gravelly clay loam, very gravelly clay.	GC	A-6, A-2, A-7	10-20	50-65	40-55	35-50	30-45	30-45	10-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
WdE*, WdF*:											
Yeates Hollow---	0-17	Very stony loam	GM-GC, SM-SC	A-4, A-2	25-35	55-75	45-70	40-65	30-50	25-30	5-10
	17-45	Extremely stony clay, very cobbly clay, extremely stony clay loam.	GC	A-6, A-7, A-2	25-55	40-65	35-60	30-55	25-50	35-50	15-30
	45-60	Extremely stony sandy loam, extremely cobbly sandy loam, extremely stony loam.	GM, GM-GC	A-2, A-1	35-60	30-55	25-50	20-40	15-30	20-30	NP-10
WeB-------------- Woodrow	0-5	Loamy fine sand	SM	A-2	0	100	100	65-80	15-35	---	NP
	5-60	Silty clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	100	100	90-100	85-95	25-40	5-20
WfA, WfB, WfC---- Woodrow	0-5	Silt loam--------	CL-ML	A-4	0	100	100	90-100	75-90	20-30	5-10
	5-60	Silty clay loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	100	100	90-100	85-95	25-40	5-20
XA*. Xerertic Torriorthents											
XB*: Xeric Torriorthents.											
Rock outcrop.											
YaC, YaD, YaE, YbF------------- Yeates Hollow	0-17	Very stony loam	GM-GC, SM-SC	A-4, A-2	25-35	55-75	45-70	40-65	30-50	25-30	5-10
	17-45	Extremely stony clay, very cobbly clay, extremely stony clay loam.	GC	A-6, A-7, A-2	25-55	40-65	35-60	30-55	25-50	35-50	15-30
	45-60	Extremely stony sandy loam, extremely cobbly sandy loam, extremely stony loam.	GM, GM-GC	A-2, A-1	35-60	30-55	25-50	20-40	15-30	20-30	NP-10

* See description of the map unit for composition and behavior characteristics of the map unit.
** NP means nonplastic.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
AaF---------------- Agassiz	0-14	18-27	1.10-1.15	0.6-2.0	0.07-0.10	6.1-8.4	<2	Low---------	0.15	1	8	1-3
	14-19	18-27	1.15-1.25	0.6-2.0	0.07-0.10	6.1-8.4	<2	Low---------	0.15			
	19	---	---	---	---	---	---	-----------	----			
AbF*:												
Agassiz-----------	0-14	18-27	1.10-1.15	0.6-2.0	0.07-0.10	6.1-8.4	<2	Low---------	0.15	1	8	1-3
	14-19	18-27	1.15-1.25	0.6-2.0	0.07-0.10	6.1-8.4	<2	Low---------	0.15			
	19	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
AcE*, AcF*, AdE*, AdF*:												
Amtoft-----------	0-5	18-27	1.15-1.25	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low---------	0.28	1	8	1-2
	5-19	18-27	1.20-1.45	2.0-6.0	0.05-0.07	7.9-9.0	<4	Low---------	0.24			
	19	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
AeD---------------- Ant Flat	0-10	18-27	1.10-1.15	0.6-2.0	0.16-0.20	6.1-8.4	<2	Moderate	0.24	3	6	1-3
	10-60	35-60	1.15-1.25	0.06-0.2	0.14-0.20	6.1-8.4	<2	High--------	0.32			
AF*. Aquic Ustifluvents												
AG*. Argic pachic Cryoborolls												
AhA, AhB, AkA, AkB--------------- Ashdown	0-8	20-27	1.10-1.15	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low---------	0.37	5	4L	.5-2
	8-60	20-35	1.15-1.45	0.2-0.6	0.14-0.17	7.4-9.0	<2	Low---------	0.43			
AmE---------------- Atepic	0-6	18-27	1.20-1.40	0.06-0.2	0.12-0.15	7.9-8.4	<2	Moderate	0.28	1	8	.5-1
	6-15	27-35	1.20-1.35	0.06-0.2	0.12-0.15	8.5-9.0	<2	Moderate	0.28			
	15	---	---	---	---	---	---	-----------	----			
BA*. Beaches												
Bb----------------- Benjamin	0-8	27-40	1.10-1.20	0.06-0.2	0.17-0.19	7.9-9.0	<2	Moderate	0.28	4	4	1-3
	8-60	35-50	1.15-1.30	0.06-0.2	0.15-0.19	7.9-9.0	2-16	Moderate	0.32			
Bc----------------- Benjamin	0-12	27-40	1.15-1.20	0.06-0.2	0.10-0.13	7.9-9.0	>8	Moderate	0.28	4	4	1-3
	12-60	35-50	1.15-1.30	0.06-0.2	0.10-0.13	7.9-9.0	>8	Moderate	0.32			
BdD, BdF, BeD, BeF--------------- Bezzant	0-13	18-24	1.10-1.15	0.6-2.0	0.11-0.13	6.6-8.4	<2	Low---------	0.20	1	8	2-5
	13-60	18-24	1.15-1.25	0.6-2.0	0.07-0.10	>7.8	<2	Low---------	0.20			
Bf----------------- Birdow	0-7	18-27	1.15-1.25	0.6-2.0	0.17-0.19	7.4-9.0	<2	Low---------	0.37	5	4L	2-3
	7-60	18-32	1.15-1.30	0.6-2.0	0.13-0.17	7.4-9.0	<2	Low---------	0.28			
BgC, BgD----------- Borvant	0-9	10-18	1.10-1.15	0.6-2.0	0.10-0.14	7.9-9.0	<2	Low---------	0.17	1	8	1-2
	9-19	10-18	1.15-1.25	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low---------	0.20			
	19	---	---	---	---	---	---	-----------	----			
BhD*, BhF*:												
Borvant-----------	0-9	10-18	1.10-1.15	0.6-2.0	0.10-0.14	7.9-9.0	<2	Low---------	0.17	1	8	1-2
	9-19	10-18	1.15-1.25	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low---------	0.20			
	19	---	---	---	---	---	---	-----------	----			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
BhD*, BhF*:												
Reywat----------	0-5	18-27	1.15-1.25	0.6-2.0	0.08-0.14	6.6-7.3	<2	Low--------	0.32	1	6	1-3
	5-9	27-35	1.20-1.30	0.2-0.6	0.13-0.17	6.6-7.3	<2	Moderate	0.28			
	9-17	27-35	1.20-1.35	0.2-0.6	0.04-0.07	6.6-8.4	<2	Low--------	0.28			
	17	---	---	---	---	---	---	-----------	----			
BkE*:												
Borvant---------	0-9	10-18	1.10-1.15	0.6-2.0	0.10-0.14	7.9-9.0	<2	Low--------	0.17	1	8	1-2
	9-19	10-18	1.15-1.25	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.20			
	19	---	---	---	---	---	---	-----------	----			
Sandall---------	0-5	20-25	1.10-1.15	0.6-2.0	0.13-0.15	6.6-8.4	<2	Low--------	0.24	2	8	1-2
	5-32	20-27	1.15-1.30	0.6-2.0	0.07-0.10	7.4-9.0	<2	Low--------	0.20			
	32	---	---	---	---	---	---	-----------	----			
Bm--------------- Bramwell	0-17	18-27	1.10-1.15	0.06-0.6	0.04-0.15	>8.4	8-16	Low--------	0.43	5	4L	2-5
	17-60	27-35	1.15-1.25	0.06-0.2	0.15-0.18	>9.0	8-16	Moderate	0.37			
BnD, BnF--------- Broadhead	0-12	18-27	1.15-1.25	0.6-2.0	0.14-0.17	6.6-7.3	<2	Low--------	0.20	2	6	2-5
	12-60	35-55	1.20-1.35	0.06-0.2	0.15-0.18	6.6-7.3	<2	High-------	0.32			
CaB, CaC, CaD---- Calita	0-7	18-27	1.10-1.15	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32	3	4L	1-2
	7-60	18-30	1.25-1.45	0.6-2.0	0.16-0.18	8.5-9.0	<4	Moderate	0.37			
CbF*:												
Calpac----------	0-21	20-25	1.30-1.40	0.6-2.0	0.08-0.11	6.6-7.8	<2	Low--------	0.17	1	8	1-3
	21-34	22-27	1.30-1.40	0.6-2.0	0.07-0.09	7.9-8.4	<2	Low--------	0.17			
	34-41	22-27	1.30-1.40	0.6-2.0	0.06-0.08	7.9-8.4	<2	Low--------	0.17			
	41	---	---	---	---	---	---	-----------	----			
Agassiz---------	0-14	18-27	1.10-1.15	0.6-2.0	0.07-0.10	6.1-8.4	<2	Low--------	0.15	1	8	1-3
	14-19	18-27	1.15-1.25	0.6-2.0	0.07-0.10	6.1-8.4	<2	Low--------	0.15			
	19	---	---	---	---	---	---	-----------	----			
CcF*:												
Calpac----------	0-21	20-25	1.30-1.40	0.6-2.0	0.08-0.11	6.6-7.8	<2	Low--------	0.17	1	8	1-3
	21-34	22-27	1.30-1.40	0.6-2.0	0.07-0.09	7.9-8.4	<2	Low--------	0.17			
	34-41	22-27	1.30-1.40	0.6-2.0	0.06-0.08	7.9-8.4	<2	Low--------	0.17			
	41	---	---	---	---	---	---	-----------	----			
Lundy-----------	0-9	18-27	1.20-1.30	2.0-6.0	0.07-0.09	7.4-8.4	<2	Low--------	0.10	1	8	1-3
	9-19	20-27	1.20-1.30	0.6-2.0	0.07-0.11	7.4-9.0	<2	Low--------	0.24			
	19	---	---	---	---	---	---	-----------	----			
CdE*:												
Checkett--------	0-2	18-27	1.15-1.20	0.6-2.0	0.06-0.08	7.9-9.0	2-4	Low--------	0.20	1	8	.5-1
	2-18	20-35	1.20-1.30	0.6-2.0	0.06-0.08	7.9-9.0	2-4	Low--------	0.20			
	18	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
Ce--------------- Cheebe	0-8	15-20	1.20-1.30	2.0-6.0	0.14-0.16	>8.4	<4	Low--------	0.37	2	4L	1-2
	8-36	35-55	1.20-1.30	0.06-0.2	0.09-0.16	>9.0	4-16	High-------	0.24			
	36-60	35-55	1.20-1.30	0.06-0.2	0.09-0.11	>8.4	>8	High-------	0.24			
Cf--------------- Cheebe	0-8	25-35	1.15-1.25	0.06-0.2	0.14-0.18	>8.4	<4	Moderate	0.32	2	4L	1-3
	8-36	35-55	1.20-1.30	0.06-0.2	0.09-0.16	>9.0	4-16	High-------	0.24			
	36-60	35-55	1.20-1.30	0.06-0.2	0.09-0.11	>8.4	>8	High-------	0.24			
CG*. Cumulic Haploxerolls												
DaC-------------- Dagor	0-29	18-27	1.10-1.15	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low--------	0.28	5	5	2-4
	29-49	18-27	1.15-1.25	0.6-2.0	0.16-0.19	6.6-7.8	<2	Low--------	0.37			
	49-60	18-27	1.15-1.30	0.6-2.0	0.16-0.19	6.6-7.8	<2	Low--------	0.37			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
DbD--------------- Deer Creek	0-7	18-27	1.10-1.15	0.6-2.0	0.11-0.13	6.1-7.8	<2	Low--------	0.28	2	8	3-5
	7-35	40-60	1.15-1.30	0.06-0.2	0.12-0.14	6.6-8.4	<2	High-------	0.24			
	35-60	27-40	1.25-1.40	0.2-0.6	0.10-0.13	7.4-9.0	<2	Low--------	0.32			
DcD*: Deer Creek-------	0-7	18-27	1.10-1.15	0.6-2.0	0.11-0.13	6.1-7.8	<2	Low--------	0.28	2	8	3-5
	7-35	40-60	1.15-1.30	0.06-0.2	0.12-0.14	6.6-8.4	<2	High-------	0.24			
	35-60	27-40	1.25-1.40	0.2-0.6	0.10-0.13	7.4-9.0	<2	Low--------	0.32			
Borvant----------	0-9	10-18	1.10-1.15	0.6-2.0	0.10-0.14	7.9-9.0	<2	Low--------	0.17	1	8	1-2
	9-19	10-18	1.15-1.25	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.20			
	19	---	---	---	---	---	---	-----------	----			
DdC, DdE, DdF----- Donnardo	0-10	15-25	1.10-1.20	0.6-2.0	0.09-0.15	7.4-9.0	<2	Low--------	0.24	2	8	1-3
	10-60	15-25	1.20-1.50	2.0-6.0	0.07-0.09	7.9-9.0	<2	Low--------	0.20			
DeF*: Donnardo---------	0-10	15-25	1.10-1.20	0.6-2.0	0.09-0.15	7.4-9.0	<2	Low--------	0.24	2	8	1-3
	10-60	15-25	1.20-1.50	2.0-6.0	0.07-0.09	7.9-9.0	<2	Low--------	0.20			
	60-65	15-25	1.20-1.30	2.0-6.0	0.05-0.10	7.9-9.0	<2	Low--------	0.20			
Hiko Peak--------	0-7	10-18	1.25-1.35	2.0-6.0	0.07-0.09	7.9-9.0	<2	Low--------	0.24	1	8	1-2
	7-19	10-18	1.25-1.35	2.0-6.0	0.06-0.12	7.9-9.0	<2	Low--------	0.28			
	19-60	10-18	1.25-1.35	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low--------	0.24			
DfB, DfC---------- Doyce	0-10	18-24	1.10-1.20	0.6-2.0	0.16-0.18	6.6-8.4	<2	Low--------	0.32	3	5	2-3
	10-19	27-35	1.15-1.40	0.2-0.6	0.16-0.18	6.6-8.4	<2	Moderate	0.20			
	19-60	18-27	1.15-1.30	0.6-2.0	0.11-0.14	7.9-9.0	<2	Low--------	0.32			
DgC--------------- Doyce	0-11	20-27	1.10-1.20	0.6-2.0	0.16-0.18	6.6-8.4	<2	Low--------	0.37	3	6	2-3
	11-30	27-35	1.25-1.40	0.2-0.6	0.16-0.18	6.6-8.4	<2	Moderate	0.37			
	30-60	20-27	1.20-1.30	0.6-2.0	0.16-0.18	>8.4	<2	Low--------	0.43			
DhD--------------- Dry Creek	0-10	18-27	1.15-1.25	0.6-2.0	0.10-0.13	5.6-6.5	<2	Low--------	0.28	2	8	1-3
	10-26	40-60	1.15-1.30	0.06-0.2	0.12-0.15	5.6-6.5	<2	High-------	0.24			
	26-60	30-50	1.20-1.40	0.2-0.6	0.09-0.13	7.4-9.0	<2	Low--------	0.20			
DkD*: Dry Creek--------	0-10	18-27	1.15-1.25	0.6-2.0	0.10-0.13	5.6-6.5	<2	Low--------	0.28	2	8	1-3
	10-26	40-60	1.15-1.30	0.06-0.2	0.12-0.15	5.6-6.5	<2	High-------	0.24			
	26-60	30-50	1.20-1.40	0.2-0.6	0.09-0.13	7.4-9.0	<2	Low--------	0.20			
Reebok-----------	0-5	18-27	1.15-1.30	0.6-2.0	0.10-0.18	6.6-8.4	<2	Low--------	0.28	1	8	1-3
	5-15	28-35	1.25-1.35	0.6-2.0	0.08-0.14	7.4-9.0	<2	Low--------	0.28			
	15-19	18-27	1.20-1.30	0.6-2.0	0.03-0.07	7.4-9.0	<2	Low--------	0.20			
	19	---	---	---	---	---	---	-----------	----			
Dm---------------- Duggins	0-5	20-27	1.30-1.50	0.6-2.0	0.16-0.18	7.9-9.0	<2	Moderate	0.32	5	6	1-3
	5-60	35-60	1.25-1.50	0.06-0.2	0.17-0.19	7.9-9.0	<4	High-------	0.20			
DN*. Dune land												
FaB--------------- Firmage	0-9	10-20	1.20-1.50	0.6-2.0	0.08-0.10	7.9-8.4	<2	Low--------	0.20	2	8	.5-1
	9-60	18-27	1.20-1.60	0.6-2.0	0.08-0.14	7.9-9.0	<2	Low--------	0.24			
FbF--------------- Flygare	0-20	10-18	1.25-1.35	0.6-2.0	0.17-0.19	5.6-6.5	<2	Low--------	0.28	2	6	1-3
	20-31	18-27	1.30-1.40	0.6-2.0	0.04-0.10	5.6-6.5	<2	Low--------	0.28			
	31-49	27-35	1.30-1.40	0.6-2.0	0.06-0.10	5.1-6.5	<2	Low--------	0.24			
	49-60	18-32	1.30-1.45	2.0-6.0	0.04-0.08	5.1-6.5	<2	Low--------	0.20			
FcF*: Flygare----------	0-20	10-18	1.25-1.35	0.6-2.0	0.17-0.19	5.6-6.5	<2	Low--------	0.28	2	6	1-3
	20-31	18-27	1.30-1.40	0.6-2.0	0.04-0.10	5.6-6.5	<2	Low--------	0.28			
	31-49	27-35	1.30-1.40	0.6-2.0	0.06-0.10	5.1-6.5	<2	Low--------	0.24			
	49-60	18-32	1.30-1.45	2.0-6.0	0.04-0.08	5.1-6.5	<2	Low--------	0.20			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm^3	In/hr	In/in	pH	Mmhos/cm					Pct
FcF*:												
Parkay----------	0-18	10-25	1.10-1.20	0.6-2.0	0.09-0.16	7.4-7.8	<2	Low--------	0.17	2	6	2-5
	18-42	25-35	1.20-1.30	0.2-0.6	0.08-0.13	7.4-8.4	<2	Low--------	0.20			
	42-47	20-30	1.20-1.30	0.2-0.6	0.04-0.09	7.4-7.8	<2	Low--------	0.20			
	47	---	---	---	---	---	---	----------	----			
Rock outcrop.												
FdF*:												
Flygare---------	0-20	10-18	1.25-1.35	0.6-2.0	0.17-0.19	5.6-6.5	<2	Low--------	0.28	2	6	1-3
	20-31	18-27	1.30-1.40	0.6-2.0	0.04-0.10	5.6-6.5	<2	Low--------	0.28			
	31-49	27-35	1.30-1.40	0.6-2.0	0.06-0.10	5.1-6.5	<2	Low--------	0.24			
	49-60	18-32	1.30-1.45	2.0-6.0	0.04-0.08	5.1-6.5	<2	Low--------	0.20			
Starley---------	0-16	18-27	1.15-1.30	0.6-2.0	0.04-0.08	6.6-8.4	<2	Low--------	0.24	1	8	1-4
	16-19	18-27	1.20-1.30	0.6-2.0	0.04-0.08	6.6-8.4	<2	Low--------	0.24			
	19	---	---	---	---	---	---	----------	----			
FeD, FeF--------- Fontreen	0-4	18-27	1.15-1.20	2.0-6.0	0.06-0.09	7.9-8.4	<2	Low--------	0.17	1	8	2-5
	4-40	18-27	1.20-1.30	2.0-6.0	0.06-0.09	>8.4	<4	Low--------	0.20			
	40-60	18-27	1.20-1.30	2.0-6.0	0.06-0.09	>9.0	<4	Low--------	0.20			
FfD*:												
Fontreen--------	0-4	18-27	1.15-1.20	2.0-6.0	0.06-0.09	7.9-8.4	<2	Low--------	0.17	1	8	2-5
	4-40	18-27	1.20-1.30	2.0-6.0	0.06-0.09	>8.4	<4	Low--------	0.20			
	40-60	18-27	1.20-1.30	2.0-6.0	0.06-0.09	>9.0	<4	Low--------	0.20			
Borvant---------	0-9	10-18	1.10-1.15	0.6-2.0	0.10-0.14	7.9-9.0	<2	Low--------	0.17	1	8	1-2
	9-19	10-18	1.15-1.25	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.20			
	19	---	---	---	---	---	---	----------	----			
FgB-------------- Freedom	0-8	18-27	1.10-1.20	0.2-0.6	0.17-0.19	7.9-8.4	<2	Low--------	0.49	2	4L	.5-1
	8-40	18-35	1.15-1.40	0.2-0.6	0.17-0.19	>8.4	<2	Moderate	0.49			
	40-60	27-45	1.20-1.50	0.2-0.6	0.15-0.19	>9.0	<2	Moderate	0.49			
FgC-------------- Freedom	0-8	18-27	1.10-1.20	0.2-0.6	0.17-0.19	7.9-8.4	<2	Low--------	0.49	2	4L	.5-1
	8-40	18-42	1.15-1.40	0.2-0.6	0.17-0.19	>8.4	<2	Moderate	0.49			
	40-60	27-45	1.20-1.50	0.2-0.6	0.15-0.19	>9.0	<2	Moderate	0.49			
FhB-------------- Fridlo	0-8	20-27	1.10-1.15	0.2-0.6	0.13-0.19	>7.3	<2	Low--------	0.37	1	6	1-3
	8-24	27-35	1.15-1.40	0.06-0.2	0.08-0.11	>7.8	4-16	Moderate	0.49			
	24-60	20-27	1.20-1.30	0.2-0.6	0.10-0.13	>8.4	8-16	Low--------	0.49			
GaBP------------- Genola	0-6	10-20	1.30-1.40	0.6-2.0	0.11-0.13	7.9-9.0	<2	Low--------	0.28	5	3	.5-2
	6-60	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low--------	0.43			
GbA, GbB, GbC, GcA, GcB, GcC--- Genola	0-6	15-25	1.20-1.30	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low--------	0.43	5	4L	.5-2
	6-60	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low--------	0.43			
GdDP------------- Goldrun	0-2	1-8	1.30-1.50	6.0-20	0.07-0.09	6.6-8.4	<2	Low--------	0.17	5	1	.5-2
	2-60	1-8	1.30-1.50	6.0-20	0.07-0.09	7.9-9.0	<2	Low--------	0.17			
GeD*:												
Goldrun---------	0-2	1-8	1.30-1.50	6.0-20	0.07-0.09	6.6-8.4	<2	Low--------	0.17	5	1	.5-2
	2-60	1-8	1.30-1.50	6.0-20	0.07-0.09	7.9-9.0	<2	Low--------	0.17			
Cheebe----------	0-8	27-35	1.15-1.25	0.06-0.2	0.14-0.18	>8.4	<4	Moderate	0.32	2	4L	1-3
	8-36	35-55	1.20-1.30	0.06-0.2	0.09-0.16	>9.0	4-16	High------	0.24			
	36-60	35-55	1.20-1.30	0.06-0.2	0.09-0.11	>8.4	>8	High------	0.24			
GfD*:												
Goldrun---------	0-2	1-8	1.30-1.50	6.0-20	0.07-0.09	6.6-8.4	<2	Low--------	0.17	5	1	.5-2
	2-60	1-8	1.30-1.50	6.0-20	0.07-0.09	7.9-9.0	<2	Low--------	0.17			
Medburn---------	0-8	5-15	1.20-1.35	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low--------	0.24	5	3	1-2
	8-32	5-15	1.20-1.35	2.0-6.0	0.09-0.12	7.9-9.0	<2	Low--------	0.20			
	32-60	5-15	1.20-1.35	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low--------	0.20			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm^3	In/hr	In/in	pH	Mmhos/cm					Pct
GgD*:												
Goldrun----------	0-2	1-8	1.30-1.50	6.0-20	0.07-0.09	6.6-8.4	<2	Low--------	0.17	5	1	.5-1
	2-60	1-8	1.30-1.50	6.0-20	0.07-0.09	7.9-9.0	<2	Low--------	0.17			
Rock outcrop.												
HaF---------------	0-8	18-27	1.15-1.25	2.0-6.0	0.13-0.18	6.6-7.8	<2	Low--------	0.17	2	6	2-5
Hamtah	8-20	18-27	1.20-1.30	2.0-6.0	0.09-0.14	6.1-7.8	<2	Low--------	0.24			
	20-28	27-40	1.20-1.30	0.2-0.6	0.08-0.11	6.6-7.3	<2	Low--------	0.17			
	28-60	40-60	1.30-1.50	0.06-0.2	0.06-0.12	6.1-7.8	<2	Moderate	0.17			
HbA, HbB----------	0-6	15-20	1.20-1.30	0.6-2.0	0.17-0.20	6.6-7.8	<2	Moderate	0.37	3	6	1-2
Hansel	6-21	24-30	1.15-1.40	0.2-0.6	0.17-0.19	7.4-9.0	2-4	Moderate	0.43			
	21-60	15-25	1.15-1.50	0.2-0.6	0.14-0.16	>8.4	<2	Low--------	0.37			
Hc----------------	0-4	18-27	1.10-1.20	0.06-0.2	0.15-0.17	>8.4	2-8	Low--------	0.43	1	4L	.5-1
Harding	4-30	35-50	1.25-1.40	0.06-0.2	0.08-0.14	>8.4	>8	Moderate	0.32			
	30-60	20-50	1.20-1.40	0.06-0.2	0.08-0.14	>8.4	>8	Moderate	0.32			
HdC, HdD, HdE-----	0-7	10-18	1.25-1.35	2.0-6.0	0.07-0.09	7.9-9.0	<2	Low--------	0.24	1	8	1-2
Hiko Peak	7-19	10-18	1.25-1.35	2.0-6.0	0.06-0.12	7.9-9.0	<2	Low--------	0.28			
	19-60	10-18	1.25-1.35	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low--------	0.24			
HeC---------------	0-5	10-18	1.10-1.20	0.6-2.0	0.17-0.19	7.4-8.4	<2	Low--------	0.55	3	4L	1-2
Hillfield	5-60	10-27	1.25-1.50	0.2-2.0	0.15-0.19	7.4-9.0	<4	Low--------	0.55			
HfC, HfD----------	0-14	18-27	1.15-1.25	0.6-2.0	0.11-0.14	6.6-7.8	<2	Low--------	0.32	2	8	3-5
Hupp	14-60	18-24	1.20-1.30	2.0-6.0	0.06-0.09	7.9-9.0	<2	Low--------	0.28			
JaD---------------	0-5	10-18	1.30-1.55	2.0-6.0	0.08-0.10	7.9-9.0	<2	Low--------	0.24	1	8	1-2
Jericho	5-9	10-18	1.30-1.55	2.0-6.0	0.08-0.14	7.9-9.0	<2	Low--------	0.32			
	9-19	10-18	1.30-1.55	2.0-6.0	0.06-0.10	7.9-9.0	<2	Low--------	0.28			
	19	---	---	---	---	---	---	-----------	----			
JbA, JbB, JbC-----	0-13	15-27	1.15-1.45	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.37	5	4L	2-4
Juab	13-38	18-27	1.15-1.30	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.43			
	38-60	18-30	1.15-1.30	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.43			
JcB, JcC----------	0-13	15-27	1.15-1.20	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.37	4	4L	2-4
Juab	13-29	18-27	1.20-1.30	0.6-2.0	0.14-0.17	7.9-9.0	<2	Low--------	0.43			
	29-40	18-27	1.20-1.30	0.6-2.0	0.08-0.13	7.9-9.0	<2	Low--------	0.37			
	40-60	10-20	1.35-1.50	2.0-6.0	0.03-0.05	7.9-9.0	<2	Low--------	0.20			
JdC*:												
Juab-------------	0-13	15-27	1.15-1.45	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.37	5	4L	2-4
	13-38	18-27	1.15-1.30	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.43			
	38-60	18-30	1.15-1.30	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.43			
Juab, gravelly substratum------	0-13	15-27	1.15-1.20	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.37	4	4L	2-4
	13-29	18-27	1.20-1.30	0.6-2.0	0.14-0.17	7.9-9.0	<2	Low--------	0.43			
	29-40	18-27	1.20-1.30	0.6-2.0	0.08-0.13	7.9-9.0	<2	Low--------	0.37			
	40-60	10-20	1.35-1.50	2.0-6.0	0.03-0.05	7.9-9.0	<2	Low--------	0.20			
JeD---------------	0-14	10-27	1.15-1.25	0.6-2.0	0.13-0.18	6.6-7.3	<2	Low--------	0.32	3	6	1-3
Justesen	14-34	27-35	1.20-1.40	0.2-0.6	0.13-0.18	6.6-8.4	<2	Moderate	0.37			
	34-51	18-35	1.20-1.40	0.2-0.6	0.12-0.20	7.4-8.4	<2	Moderate	0.28			
	51-60	18-35	1.20-1.30	0.2-2.0	0.12-0.20	7.4-9.0	<2	Low--------	0.28			
KaB---------------	0-8	18-27	1.20-1.40	0.6-2.0	0.14-0.20	7.9-8.4	<2	Low--------	0.43	5	4L	3-5
Keigley	8-60	27-35	1.30-1.40	0.2-0.6	0.17-0.19	7.4-9.0	<2	Moderate	0.49			
Kb----------------	0-13	15-27	1.15-1.25	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low--------	0.28	5	4L	2-4
Kirkham	13-40	20-35	1.25-1.40	0.2-0.6	0.15-0.17	7.4-9.0	<4	Moderate	0.32			
	40-60	35-50	1.25-1.30	0.2-0.6	0.15-0.17	7.9-9.0	<4	Moderate	0.37			
KcF*:												
Kitchell---------	0-10	10-27	1.15-1.25	0.6-2.0	0.11-0.13	6.6-7.8	<2	Low--------	0.17	2	8	2-5
	10-60	18-35	1.20-1.30	2.0-6.0	0.08-0.11	6.6-8.4	<2	Low--------	0.15			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cm^3	In/hr	In/in	pH	Mmhos/cm					Pct
KcF*:												
Rock outcrop.												
LaA, LaB, LaC----- Linoyer	0-5	10-18	1.30-1.50	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low--------	0.43	5	3	.5-1
	5-60	10-18	1.30-1.50	0.6-2.0	0.15-0.18	7.9-9.0	<2	Low--------	0.49			
LaD2-------------- Linoyer	0-2	10-18	1.30-1.50	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low--------	0.43	5	3	.5-1
	2-60	10-18	1.30-1.50	0.6-2.0	0.15-0.18	7.9-9.0	<2	Low--------	0.49			
LbE--------------- Lizzant	0-9	18-24	1.15-1.20	2.0-6.0	0.07-0.11	7.4-8.4	<2	Low--------	0.20	2	8	2-5
	9-60	18-27	1.20-1.30	2.0-6.0	0.10-0.12	7.9-9.0	<2	Low--------	0.24			
LbF, LcF---------- Lizzant	0-9	18-24	1.15-1.20	2.0-6.0	0.07-0.11	7.4-8.4	<2	Low--------	0.20	2	8	2-5
	9-60	18-27	1.20-1.30	2.0-6.0	0.10-0.12	7.9-9.0	<2	Low--------	0.24			
LdE*, LdF*:												
Lodar------------	0-10	18-27	1.15-1.25	0.6-2.0	0.07-0.11	7.4-9.0	<2	Low--------	0.24	1	8	2-5
	10-15	18-27	1.20-1.30	0.6-2.0	0.07-0.11	7.4-9.0	<2	Low--------	0.24			
	15	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
LeF*:												
Lundy------------	0-6	18-27	1.20-1.30	2.0-6.0	0.07-0.09	7.4-8.4	<2	Low--------	0.10	1	8	1-3
	6-19	10-30	1.20-1.30	0.6-2.0	0.07-0.11	7.4-9.0	<2	Low--------	0.24			
	19	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
MaB--------------- Manassa	0-15	18-27	1.15-1.25	0.06-0.2	0.11-0.14	7.9-9.0	8-16	Moderate	0.49	1	4L	<.5
	15-60	18-35	1.20-1.30	0.06-0.2	0.03-0.08	>9.0	>16	Moderate	0.49			
MbC2-------------- Manassa	0-5	18-27	1.15-1.25	0.06-0.2	0.11-0.14	7.9-9.0	8-16	Moderate	0.49	1	4L	<.5
	5-60	18-35	1.20-1.30	0.06-0.2	0.03-0.08	>9.0	>16	Moderate	0.49			
McB--------------- Manassa	0-15	18-27	1.15-1.25	0.06-0.2	0.11-0.14	7.9-9.0	8-16	Moderate	0.49	1	4L	<.5
	15-60	18-35	1.20-1.30	0.06-0.2	0.03-0.08	>9.0	>16	Moderate	0.49			
MdB*:												
Manassa----------	0-15	18-27	1.15-1.25	0.06-0.2	0.11-0.14	7.9-9.0	8-16	Moderate	0.49	1	4L	<.5
	15-60	18-35	1.20-1.30	0.06-0.2	0.03-0.08	>9.0	>16	Moderate	0.49			
Mellor-----------	0-7	20-27	1.10-1.25	0.2-0.6	0.08-0.15	>8.4	2-8	Low--------	0.55	1	4L	.5-1
	7-60	27-35	1.15-1.30	0.06-0.2	0.02-0.08	>9.0	>8	Moderate	0.55			
MeC, MeD---------- Manila	0-7	20-25	1.15-1.20	0.6-2.0	0.16-0.18	6.1-8.4	<2	Moderate	0.43	2	6	1-4
	7-43	35-45	1.20-1.30	0.06-0.2	0.17-0.19	5.6-7.8	<2	High-------	0.37			
	43-60	20-35	1.14-1.30	0.6-2.0	0.10-0.14	7.9-9.0	<2	Moderate	0.37			
MfA, MfB---------- Medburn	0-8	5-15	1.20-1.35	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low--------	0.24	5	3	1-2
	8-32	5-15	1.20-1.35	2.0-6.0	0.09-0.12	7.9-9.0	<2	Low--------	0.20			
	32-60	5-15	1.20-1.35	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low--------	0.20			
Mg---------------- Mellor	0-7	20-27	1.10-1.25	0.2-0.6	0.08-0.15	>8.4	2-8	Low--------	0.55	1	4L	.5-1
	7-20	27-35	1.15-1.30	0.06-0.2	0.02-0.08	>9.0	>8	Moderate	0.55			
	20-60	20-45	1.15-1.30	0.06-0.2	0.02-0.05	>9.0	>16	Moderate	0.55			
Mh---------------- Mellor	0-2	14-18	1.15-1.25	0.2-0.6	0.17-0.18	8.5-9.0	<2	Low--------	0.55	1	4L	.5-1
	2-20	27-35	1.20-1.30	0.06-0.2	0.05-0.08	>9.0	>16	Moderate	0.55			
	20-36	18-30	1.20-1.25	0.2-0.6	0.05-0.08	>9.0	>16	Low--------	0.64			
	36-60	10-14	1.30-1.50	2.0-6.0	0.03-0.06	>9.0	>16	Low--------	0.43			
MkC--------------- Modoc	0-4	10-18	1.25-1.40	0.6-2.0	0.09-0.13	6.6-8.4	<2	Low--------	0.32	2	3	1-3
	4-16	27-35	1.20-1.30	0.2-0.6	0.15-0.19	6.6-8.4	<2	Moderate	0.37			
	16-39	10-18	1.35-1.50	0.2-0.6	0.06-0.10	>8.4	<2	Low--------	0.37			
	39-40	---	---	---	---	---	---	-----------	----			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors		Wind erodi- bility group	Organic matter
									K	T		
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
Mm------------ Moroni	0-7	27-40	1.15-1.25	0.06-0.2	0.17-0.19	7.4-8.4	<2	High------	0.24	5	4	.5-1
	7-60	35-60	1.20-1.30	0.06-0.2	0.17-0.19	7.9-9.0	<2	High------	0.24			
MnF------------ Mortenson	0-12	10-18	1.15-1.25	0.6-2.0	0.17-0.19	6.1-7.3	<2	Low-------	0.32	2	6	1-3
	12-31	10-18	1.15-1.25	0.2-0.6	0.08-0.10	5.6-7.3	<2	Low-------	0.24			
	31-60	40-60	1.15-1.25	0.06-0.2	0.08-0.11	5.6-7.3	<2	Moderate	0.17			
MoC------------ Mountainville	0-10	10-18	1.25-1.35	2.0-6.0	0.07-0.10	7.4-9.0	<2	Low-------	0.17	1	8	1-3
	10-29	20-35	1.25-1.45	0.6-2.0	0.06-0.08	7.4-9.0	<2	Moderate	0.17			
	29-60	10-25	1.25-1.50	0.6-2.0	0.04-0.07	7.9-9.0	<2	Low-------	0.17			
MpB------------ Mountainville	0-7	20-27	1.10-1.20	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low-------	0.24	2	8	1-3
	7-17	27-35	1.20-1.30	0.6-2.0	0.11-0.13	7.4-8.4	<2	Low-------	0.20			
	17-60	4-12	1.35-1.60	6.0-20.0	0.02-0.04	7.9-9.0	<2	Low-------	0.10			
MrB*:												
Mountainville---	0-7	20-27	1.10-1.20	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low-------	0.24	2	8	1-3
	7-17	27-35	1.20-1.30	0.6-2.0	0.11-0.13	7.4-8.4	<2	Low-------	0.20			
	17-60	4-12	1.35-1.60	6.0-20.0	0.02-0.04	7.9-9.0	<2	Low-------	0.10			
Doyce----------	0-10	18-24	1.10-1.20	0.6-2.0	0.16-0.18	6.6-8.4	<2	Low-------	0.32	3	5	2-3
	10-19	27-35	1.15-1.40	0.2-0.6	0.16-0.18	6.6-8.4	<2	Moderate	0.20			
	19-60	18-27	1.15-1.30	0.6-2.0	0.11-0.14	7.9-9.0	<2	Low-------	0.32			
MsD------------ Mower	0-11	28-35	1.10-1.20	0.2-0.6	0.16-0.18	7.9-8.4	<2	Moderate	0.24	2	4L	1-3
	11-19	28-35	1.15-1.25	0.2-0.6	0.16-0.18	7.9-9.0	<2	Moderate	0.32			
	19-38	28-35	1.15-1.25	0.2-0.6	0.09-0.13	8.5-9.0	<2	Moderate	0.28			
	38	---	---	---	---	---	---	----------	----			
MtF*:												
Mower----------	0-11	28-35	1.15-1.25	0.2-0.6	0.15-0.17	7.9-8.4	<2	Low-------	0.24	1	8	1-3
	11-19	28-35	1.15-1.25	0.2-0.6	0.16-0.18	7.9-9.0	<2	Moderate	0.32			
	19-38	28-35	1.15-1.25	0.2-0.6	0.09-0.13	8.5-9.0	<2	Moderate	0.28			
	38	---	---	---	---	---	---	----------	----			
Rock outcrop.												
MuB, MuC--------- Musinia	0-7	20-27	1.15-1.25	0.6-2.0	0.17-0.18	7.9-8.4	2-4	Low-------	0.49	5	4L	1-3
	7-60	25-35	1.20-1.30	0.2-0.6	0.15-0.18	>7.8	2-4	Moderate	0.43			
MvB, MvC--------- Musinia	0-7	27-35	1.15-1.25	0.2-0.6	0.17-0.18	7.9-8.4	2-4	Moderate	0.43	5	4L	1-3
	7-60	25-35	1.20-1.30	0.2-0.6	0.15-0.18	>7.8	2-4	Moderate	0.43			
NaB------------ Nephi	0-9	20-27	1.10-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.37	5	4L	1-3
	9-23	27-35	1.25-1.40	0.06-0.2	0.16-0.18	7.4-8.4	<2	Moderate	0.43			
	23-42	27-35	1.25-1.40	0.06-0.2	0.16-0.18	7.9-9.0	<2	Moderate	0.43			
	42-60	15-30	1.20-1.40	0.06-0.2	0.16-0.18	7.9-9.0	<2	Moderate	0.37			
OaD, OaE--------- Orcky	0-3	10-18	1.25-1.35	2.0-6.0	0.06-0.11	7.9-9.0	<2	Low-------	0.20	2	6	.5-2
	3-17	10-18	1.25-1.40	0.6-2.0	0.07-0.12	7.9-9.0	<2	Low-------	0.32			
	17-60	2-5	1.40-1.75	>20	0.02-0.06	>7.8	<2	Low-------	0.10			
PA*. Pachic Calcixerolls												
PB*. Pachic Haploxerolls												
PC*, PD*. Pachic Cryoborolls												

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
PeD*, PeF*:												
Parkay----------	0-18	10-25	1.10-1.20	0.6-2.0	0.09-0.16	7.4-7.8	<2	Low--------	0.17	2	6	2-5
	18-42	25-35	1.20-1.30	0.2-0.6	0.08-0.13	7.4-8.4	<2	Low--------	0.20			
	42-47	20-30	1.20-1.30	0.2-0.6	0.04-0.09	7.4-7.8	<2	Low--------	0.20			
	47	---	---	---	---	---	---	----------	----			
Rock outcrop.												
PfA, PfB, PfC---- Parleys	0-11	18-27	1.15-1.25	0.6-2.0	0.16-0.19	6.1-8.4	<2	Low--------	0.32	3	6	1-3
	11-19	27-35	1.25-1.30	0.2-0.6	0.16-0.18	6.1-8.4	<2	Moderate	0.32			
	19-60	18-35	1.25-1.50	0.2-2.0	0.14-0.18	>7.8	<2	Low--------	0.49			
PgC-------------- Pharo	0-8	18-27	1.15-1.25	0.6-2.0	0.08-0.12	7.9-8.4	<2	Low--------	0.15	2	8	1-3
	8-18	18-27	1.15-1.35	0.6-2.0	0.06-0.10	7.9-8.4	<2	Low--------	0.17			
	18-60	10-18	1.25-1.45	0.6-2.0	0.05-0.08	7.9-8.4	<2	Low--------	0.17			
PhD-------------- Pibler	0-4	15-20	1.25-1.30	2.0-6.0	0.08-0.10	7.4-8.4	<2	Low--------	0.28	1	8	1-2
	4-16	15-25	1.20-1.40	2.0-6.0	0.08-0.11	>7.8	<2	Low--------	0.24			
	16	---	---	---	---	---	---	----------	----			
PK*:												
Pits.												
Dumps.												
PmD-------------- Pober	0-4	10-18	1.20-1.50	2.0-6.0	0.10-0.12	7.9-8.4	<2	Low--------	0.28	1	3	1-2
	4-13	15-25	1.20-1.40	0.6-2.0	0.09-0.15	7.9-9.0	<2	Low--------	0.28			
	13-26	15-25	1.20-1.50	0.6-2.0	0.06-0.11	8.5-9.0	<2	Low--------	0.24			
	26	---	---	---	---	---	---	----------	----			
PnD*:												
Pober-----------	0-4	10-18	1.20-1.50	2.0-6.0	0.10-0.12	7.9-8.4	<2	Low--------	0.28	1	3	1-2
	4-13	15-25	1.20-1.40	0.6-2.0	0.09-0.15	7.9-9.0	<2	Low--------	0.28			
	13-26	15-25	1.20-1.50	0.6-2.0	0.06-0.11	8.5-9.0	<2	Low--------	0.24			
	26	---	---	---	---	---	---	----------	----			
Pibler----------	0-4	15-20	1.25-1.30	2.0-6.0	0.08-0.10	7.4-8.4	<2	Low--------	0.28	1	8	1-2
	4-16	15-25	1.20-1.40	2.0-6.0	0.08-0.11	>7.8	<2	Low--------	0.24			
	16	---	---	---	---	---	---	----------	----			
Po--------------- Provo Bay	0-15	18-27	1.10-1.30	0.2-0.6	0.13-0.16	7.4-7.8	4-8	Low--------	0.24	5	8	2-5
	15-60	27-35	1.10-1.30	0.06-0.2	0.14-0.17	6.6-7.8	4-8	Moderate	0.32			
Pp*:												
Provo Bay--------	0-15	18-27	1.10-1.30	0.2-0.6	0.13-0.16	7.4-7.8	4-8	Low--------	0.24	5	8	2-5
	15-60	27-35	1.10-1.30	0.06-0.2	0.14-0.17	6.6-7.8	4-8	Moderate	0.32			
Cheebe----------	0-8	25-35	1.15-1.25	0.06-0.2	0.14-0.18	>8.4	<4	Moderate	0.32	2	4L	1-3
	8-36	35-55	1.20-1.30	0.06-0.2	0.09-0.16	>9.0	4-16	High------	0.24			
	36-60	35-55	1.20-1.30	0.06-0.2	0.09-0.11	>8.4	>8	High	0.24			
RaD, RaE--------- Reebok	0-5	18-27	1.15-1.30	0.6-2.0	0.10-0.18	6.6-8.4	<2	Low--------	0.28	1	8	1-3
	5-15	28-35	1.25-1.35	0.6-2.0	0.08-0.14	7.4-9.0	<2	Low--------	0.28			
	15-19	18-27	1.20-1.30	0.6-2.0	0.03-0.07	7.4-9.0	<2	Low--------	0.20			
	19	---	---	---	---	---	---	----------	----			
RbC-------------- Renol	0-9	10-18	1.25-1.50	0.6-2.0	0.07-0.09	6.6-7.8	<2	Low--------	0.28	1	8	1-3
	9-17	22-35	1.20-1.50	0.6-2.0	0.08-0.13	7.4-9.0	<2	Low--------	0.20			
	17-27	20-35	1.25-1.40	0.6-2.0	0.08-0.13	>8.4	<2	Low--------	0.20			
	27	---	---	---	---	---	---	----------	----			
RcD*:												
Renol-----------	0-9	10-18	1.25-1.50	0.6-2.0	0.07-0.09	6.6-7.8	<2	Low--------	0.28	1	8	1-3
	9-17	28-35	1.20-1.50	0.6-2.0	0.08-0.13	7.4-9.0	<2	Low--------	0.20			
	17-27	20-35	1.25-1.40	0.6-2.0	0.08-0.13	>8.4	<2	Low--------	0.20			
	27	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
RcD*:												
Reebok	0-5	18-27	1.15-1.30	0.6-2.0	0.10-0.18	6.6-8.4	<2	Low	0.28	1	8	1-3
	5-15	28-35	1.25-1.35	0.6-2.0	0.08-0.14	7.4-9.0	<2	Low	0.28			
	15-19	18-27	1.20-1.30	0.6-2.0	0.03-0.07	7.4-9.0	<2	Low	0.20			
	19	---	---	---	---	---	---	---	---			
RdE*:												
Reywat	0-5	18-27	1.15-1.25	0.6-2.0	0.08-0.14	6.6-7.3	<2	Low	0.32	1	6	1-3
	5-9	27-35	1.20-1.30	0.2-0.6	0.13-0.17	6.6-7.3	<2	Moderate	0.28			
	9-17	27-35	1.20-1.35	0.2-0.6	0.04-0.07	6.6-8.4	<2	Low	0.28			
	17	---	---	---	---	---	---	---	---			
Reebok	0-5	18-27	1.15-1.30	0.6-2.0	0.10-0.18	6.6-8.4	<2	Low	0.28	1	8	1-3
	5-15	28-35	1.25-1.35	0.6-2.0	0.08-0.14	7.4-9.0	<2	Low	0.28			
	15-19	18-27	1.20-1.30	0.6-2.0	0.03-0.07	7.4-9.0	<2	Low	0.20			
	19	---	---	---	---	---	---	---	---			
Rock outcrop.												
ReE*, ReF*:												
Reywat	0-5	18-27	1.15-1.25	0.6-2.0	0.08-0.14	6.6-7.3	<2	Low	0.32	1	6	1-3
	5-9	27-35	1.20-1.30	0.2-0.6	0.13-0.17	6.6-7.3	<2	Moderate	0.28			
	9-17	27-35	1.20-1.35	0.2-0.6	0.04-0.07	6.6-8.4	<2	Low	0.28			
	17	---	---	---	---	---	---	---	---			
Rock outcrop.												
RF*. Rock outcrop												
RgF*:												
Rock outcrop.												
Amtoft	0-5	18-27	1.15-1.25	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low	0.28	1	8	1-2
	5-19	18-27	1.20-1.45	2.0-6.0	0.05-0.07	7.9-9.0	<4	Low	0.24			
	19	---	---	---	---	---	---	---	---			
RhF*:												
Rock outcrop.												
Lodar	0-10	18-27	1.15-1.25	0.6-2.0	0.07-0.11	7.4-9.0	<2	Low	0.24	1	8	2-5
	10-15	18-27	1.20-1.30	0.6-2.0	0.07-0.11	7.4-9.0	<2	Low	0.24			
	15	---	---	---	---	---	---	---	---			
RkF*:												
Rock outcrop.												
Lundy	0-6	18-27	1.20-1.30	2.0-6.0	0.07-0.09	7.4-8.4	<2	Low	0.10	1	8	1-3
	6-19	10-33	1.20-1.30	0.6-2.0	0.07-0.11	7.4-9.0	<2	Low	0.24			
	19	---	---	---	---	---	---	---	---			
RmF*:												
Rock outcrop.												
Saxby	0-6	20-24	1.15-1.25	0.6-2.0	0.08-0.11	8.5-9.0	<2	Low	0.28	1	8	1-3
	6-18	20-24	1.15-1.30	0.6-2.0	0.05-0.08	8.5-9.0	<2	Low	0.24			
	18	---	---	---	---	---	---	---	---			
RnF*:												
Rock outcrop.												
Sheep Creek	0-8	20-25	1.15-1.25	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low	0.24	1	8	2-5
	8-17	28-32	1.25-1.40	0.6-2.0	0.09-0.12	6.6-7.8	<2	Low	0.28			
	17-28	5-18	1.35-1.45	2.0-6.0	0.06-0.07	7.4-8.4	<2	Low	0.24			
	28	---	---	---	---	---	---	---	---			
RoF*:												
Rock outcrop.												

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm³	In/hr	In/in	pH	Mmhos/cm					Pct
RoF*:												
Wallsburg--------	0-10	18-27	1.20-1.40	0.6-2.0	0.05-0.10	6.1-7.8	<2	Low--------	0.15	1	8	1-4
	10-19	35-50	1.25-1.35	0.2-0.6	0.05-0.09	6.6-7.8	<2	Low--------	0.15			
	19	---	---	---	---	---	---	-----------	----			
RpD---------------	0-7	27-35	1.20-1.30	0.6-2.0	0.10-0.13	7.9-8.4	<2	Low--------	0.28	1	8	1-2
Rofiss	7-60	27-35	1.25-1.35	0.2-0.6	0.05-0.10	8.5-9.0	<2	Low--------	0.24			
Rr----------------	0-9	18-27	1.15-1.30	0.6-2.0	0.17-0.20	7.4-7.8	<4	Low--------	0.24	2	8	2-5
Roshe Springs	9-60	18-27	1.25-1.40	0.6-2.0	0.16-0.18	7.4-9.0	<4	Low--------	0.37			
RS*. Rubble land												
Sa----------------	0-7	18-27	1.20-1.30	0.06-0.2	0.01-0.08	>7.8	>16	Moderate	0.49	5	4L	<1
Saltair	7-60	20-35	1.20-1.30	0.06-0.2	0.01-0.08	>7.8	>16	Moderate	0.49			
SbF---------------	0-5	20-25	1.10-1.15	0.6-2.0	0.13-0.15	6.6-8.4	<2	Low--------	0.24	2	8	1-2
Sandall	5-32	20-27	1.15-1.30	0.6-2.0	0.07-0.10	7.4-9.0	<2	Low--------	0.20			
	32	---	---	---	---	---	---	-----------	----			
ScD, ScF----------	0-6	10-15	1.25-1.55	2.0-6.0	0.08-0.10	7.9-9.0	<2	Low--------	0.28	1	8	1-2
Sanpete	6-60	10-15	1.35-1.55	2.0-6.0	0.04-0.08	7.9-9.0	<2	Low--------	0.17			
SdE*, SdF*, SeB*, SeF*:												
Saxby-----------	0-6	18-27	1.15-1.25	0.6-2.0	0.08-0.11	8.5-9.0	<2	Low--------	0.28	1	8	1-3
	6-18	18-27	1.15-1.30	0.6-2.0	0.05-0.08	8.5-9.0	<2	Low--------	0.24			
	18	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
SfC, SfD, SfE, SgC--------------	0-15	10-20	1.35-1.45	0.6-2.0	0.18-0.20	6.6-9.0	2-4	Low--------	0.55	1	5	.5-1
Shabliss	15-40	---	---	---	---	---	---	-----------	----			
	40-60	14-25	1.45-1.50	2.0-6.0	0.11-0.14	>7.8	4-8	Low--------	0.43			
ShE, ShF, SkF-----	0-8	20-25	1.15-1.25	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low--------	0.24	1	8	2-5
Sheep Creek	8-17	27-35	1.25-1.40	0.6-2.0	0.08-0.11	6.6-8.4	<2	Low--------	0.28			
	17-28	5-18	1.35-1.45	2.0-6.0	0.06-0.07	7.4-8.4	<2	Low--------	0.24			
	28	---	---	---	---	---	---	-----------	----			
SmE*:												
Sheep Creek------	0-8	20-25	1.15-1.25	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low--------	0.24	1	8	2-5
	8-17	27-35	1.25-1.40	0.6-2.0	0.08-0.11	6.6-8.4	<2	Low--------	0.28			
	17-28	5-18	1.35-1.45	2.0-6.0	0.06-0.07	7.4-8.4	<2	Low--------	0.24			
	28	---	---	---	---	---	---	-----------	----			
Flygare----------	0-20	18-22	1.25-1.35	0.6-2.0	0.17-0.19	5.6-6.5	<2	Low--------	0.28	2	6	1-3
	20-31	20-32	1.30-1.40	0.6-2.0	0.04-0.10	5.6-6.5	<2	Low--------	0.28			
	31-49	20-32	1.30-1.40	0.6-2.0	0.06-0.10	5.1-6.5	<2	Low--------	0.24			
	49-60	15-32	1.30-1.45	2.0-6.0	0.04-0.08	5.1-6.5	<2	Low--------	0.20			
SN*. Slickens												
SoD---------------	0-4	18-27	1.15-1.25	2.0-6.0	0.11-0.13	7.4-9.0	<2	Low--------	0.20	1	8	1-2
Spager	4-17	18-27	1.15-1.30	2.0-6.0	0.08-0.11	>8.4	<4	Low--------	0.20			
	17	---	---	---	---	---	---	-----------	----			
SpE*, SpF*:												
Starley----------	0-16	18-27	1.15-1.30	0.6-2.0	0.04-0.08	6.6-8.4	<2	Low--------	0.24	1	8	2-5
	16-19	18-27	1.20-1.30	0.6-2.0	0.04-0.08	6.6-8.4	<2	Low--------	0.24			
	19	---	---	---	---	---	---	-----------	----			
Rock outcrop.												

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
SrE---------------- Sumine	0-2	10-20	1.15-1.25	0.6-2.0	0.08-0.10	6.6-8.4	<2	Low--------	0.15	1	8	2-5
	2-22	20-35	1.15-1.30	0.6-2.0	0.08-0.12	6.6-8.4	<2	Low--------	0.20			
	22-26	10-18	1.20-1.35	2.0-6.0	0.04-0.07	6.6-8.4	<2	Low--------	0.20			
	26	---	---	---	---	---	---	-----------	----			
SsE*, SsF*:												
Sumine-----------	0-2	10-20	1.15-1.25	0.6-2.0	0.08-0.10	6.6-8.4	<2	Low--------	0.15	1	8	2-5
	2-26	20-35	1.15-1.30	0.6-2.0	0.08-0.12	6.6-8.4	<2	Low--------	0.20			
	26	---	---	---	---	---	---	-----------	----			
Reywat-----------	0-5	18-27	1.15-1.25	0.6-2.0	0.08-0.14	6.6-7.3	<2	Low--------	0.32	1	6	1-3
	5-9	27-35	1.20-1.30	0.2-0.6	0.13-0.17	6.6-7.3	<2	Moderate	0.28			
	9-17	27-35	1.20-1.35	0.2-0.6	0.04-0.07	6.6-8.4	<2	Low--------	0.28			
	17	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
TaA, TaB, TaC----- Taylorsville	0-13	18-27	1.15-1.30	0.2-0.6	0.16-0.18	7.9-9.0	<2	Low--------	0.37	2	4L	1-3
	13-60	27-35	1.20-1.35	0.06-0.2	0.17-0.19	7.9-9.0	2-4	Moderate	0.43			
TbB---------------- Thiokol	0-10	18-27	1.10-1.15	0.6-2.0	0.17-0.19	7.4-9.0	<2	Moderate	0.43	3	4L	1-3
	10-23	18-27	1.15-1.25	0.6-2.0	0.17-0.19	7.4-9.0	<2	Moderate	0.43			
	23-60	18-35	1.15-1.25	0.6-2.0	0.16-0.18	>7.8	2-4	Moderate	0.49			
TcC*:												
Thiokol----------	0-10	18-27	1.10-1.15	0.6-2.0	0.17-0.19	7.4-9.0	<2	Moderate	0.43	3	4L	1-3
	10-23	18-27	1.15-1.25	0.6-2.0	0.17-0.19	7.4-9.0	<2	Moderate	0.43			
	23-60	18-35	1.15-1.25	0.6-2.0	0.16-0.18	>7.8	2-4	Moderate	0.49			
Linoyer----------	0-7	12-18	1.30-1.50	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low--------	0.43	5	3	.5-1
	7-60	12-18	1.30-1.50	0.6-2.0	0.05-0.18	7.9-9.0	<2	Low--------	0.49			
TdB---------------- Truesdale	0-3	10-18	1.30-1.50	2.0-6.0	0.14-0.16	7.9-8.4	<2	Low--------	0.37	2	3	1-2
	3-25	10-18	1.30-1.50	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low--------	0.43			
	25-46	---	---	---	---	---	---	-----------	----			
	46-60	10-18	1.25-1.50	0.6-2.0	0.08-0.11	7.9-9.0	8-16	Low--------	0.43			
TE*. Typic Cryoborolls												
TF*. Typic Haploborolls												
WaB, WbB---------- Wales	0-13	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-9.0	<2	Low--------	0.32	5	4L	.5-1
	13-60	18-27	1.20-1.30	0.6-2.0	0.14-0.17	7.4-9.0	<2	Low--------	0.37			
WcF*:												
Wallsburg--------	0-10	18-27	1.20-1.40	0.6-2.0	0.05-0.10	6.1-7.8	<2	Low--------	0.15	1	8	1-4
	10-19	35-50	1.25-1.35	0.2-0.6	0.05-0.09	6.6-7.8	<2	Low--------	0.15			
	19	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
WdE*, WdF*:												
Wallsburg--------	0-10	18-27	1.20-1.40	0.6-2.0	0.05-0.10	6.1-7.8	<2	Low--------	0.15	1	8	1-4
	10-19	35-50	1.25-1.35	0.2-0.6	0.05-0.09	6.6-7.3	<2	Low--------	0.15			
	19	---	---	---	---	---	---	-----------	----			
Yeates Hollow----	0-17	20-25	1.15-1.25	0.6-2.0	0.09-0.13	6.1-7.3	<2	Low--------	0.17	1	8	2-5
	17-45	35-60	1,30-1.40	0.06-0.2	0.08-0.12	6.1-7.8	<2	Moderate	0.20			
	45-60	10-20	1.40-1.50	2.0-6.0	0.05-0.07	6.6-8.4	<2	Low--------	0.20			
WeB---------------- Woodrow	0-5	5-8	1.35-1.55	2.0-6.0	0.03-0.05	7.9-9.0	2-4	Low--------	0.43	5	2	1-2
	5-60	27-35	1.20-1.35	0.06-0.2	0.17-0.18	7.9-9.0	2-4	Moderate	0.43			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm					Pct
WfA, WfB, WfC----Woodrow	0-5	18-27	1.15-1.25	0.2-0.6	0.17-0.18	7.9-9.0	2-4	Low--------	0.49	5	4L	1-2
	5-60	27-35	1.20-1.35	0.06-0.2	0.17-0.18	7.9-9.0	2-4	Moderate	0.43			
XA*. Xerertic Torriorthents												
XB*: Xeric Torriorthents.												
Rock outcrop.												
YaC, YaD, YaE, YbF-------------- Yeates Hollow	0-17	20-35	1.15-1.25	0.6-2.0	0.09-0.13	6.1-7.3	<2	Low--------	0.17	1	8	2-5
	17-45	35-60	1.30-1.40	0.06-0.2	0.08-0.12	6.1-7.8	<2	Moderate	0.20			
	45-60	10-20	1.40-1.50	2.0-6.0	0.05-0.07	6.6-8.4	<2	Low--------	0.20			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

The symbol > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated.]

Soil name and map symbol	Hydrologic group	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
		In		In				
AaF---------------- Agassiz	D	10-20	Hard	---	---	Moderate-----	High---------	Moderate.
AbF*: Agassiz----------	D	10-20	Hard	---	---	Moderate-----	High---------	Moderate.
Rock outcrop.								
AcE*, AcF*, AdE*, AdF*: Amtoft----------	D	10-20	Hard	---	---	Moderate-----	High---------	Moderate.
Rock outcrop.								
AeD---------------- Ant Flat	C	>60	---	---	---	Moderate-----	High---------	Moderate.
AF*. Aquic Ustifluvents								
AG*. Argic Pachic Cryoborolls								
AhA, AhB, AkA, AkB-------------- Ashdown	B	>60	---	---	---	Moderate-----	High---------	High.
AmE---------------- Atepic	D	10-20	Soft	---	---	Moderate-----	High---------	Moderate.
BA*. Beaches								
Bb----------------- Benjamin	D	>60	---	---	---	High---------	High---------	Moderate.
Bc----------------- Benjamin	D	>60	---	---	---	High---------	High---------	High.
BdD, BdF, BeD, BeF-------------- Bezzant	B	>60	---	---	---	Moderate-----	High---------	Moderate.
Bf----------------- Birdow	B	>60	---	---	---	Moderate-----	High---------	Moderate.
BgC, BgD---------- Borvant	D	>60	---	16-20	Thick	Moderate-----	High---------	Moderate.
BhD*, BhF*: Borvant----------	D	>60	---	16-20	Thick	Moderate-----	High---------	Moderate.
Reywat-----------	D	12-20	Hard	---	---	Moderate-----	Moderate----	Low.
BkE*: Borvant----------	D	>60	---	16-20	Thick	Moderate-----	High---------	Moderate.
Sandall----------	C	20-40	Hard	---	---	Moderate-----	High---------	Moderate.
Bm----------------- Bramwell	C	>60	---	---	---	High---------	High---------	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
		In		In				
BnD, BnF----------- Broadhead	C	>60	---	---	---	Moderate-----	Moderate----	Low.
CaB, CaC, CaD----- Calita	B	>60	---	---	---	Moderate-----	High--------	Moderate.
CbF*:								
Calpac-----------	B	40-60	Hard	---	---	Moderate-----	High--------	Moderate.
Agassiz----------	D	10-20	Hard	---	---	Moderate-----	High--------	Moderate.
CcF*:								
Calpac-----------	B	40-60	Hard	---	---	Moderate-----	High--------	Moderate.
Lundy------------	D	10-20	Hard	---	---	Moderate-----	High--------	Moderate.
CdE*:								
Checkett---------	D	15-20	Hard	---	---	Low----------	High--------	Moderate.
Rock outcrop.								
Ce, Cf------------ Cheebe	D	>60	---	---	---	High---------	High--------	High.
CG*. Cumulic Haploxerolls								
DaC--------------- Dagor	B	>60	---	---	---	Moderate-----	High--------	Moderate.
DbD--------------- Deer Creek	C	>60	---	---	---	Moderate-----	High--------	Moderate.
DcD*:								
Deer Creek--------	C	>60	---	---	---	Moderate-----	High--------	Moderate.
Borvant----------	D	>60	---	16-20	Thick	Moderate-----	High--------	Moderate.
DdC, DdE, DdF----- Donnardo	B	>60	---	---	---	Moderate-----	High--------	Moderate.
DeF*:								
Donnardo---------	B	>60	---	---	---	Moderate-----	High--------	Moderate.
Hiko Peak--------	B	>60	---	---	---	Moderate-----	High--------	Moderate.
DfB, DfC, DgC----- Doyce	C	>60	---	---	---	Moderate-----	High--------	Moderate.
DhD--------------- Dry Creek	C	>60	---	---	---	Moderate-----	High--------	Moderate.
DkD*:								
Dry Creek--------	C	>60	---	---	---	Moderate-----	High--------	Moderate.
Reebok-----------	D	>60	---	10-20	Thick	Moderate-----	High--------	Moderate.
Dm---------------- Duggins	C	>60	---	---	---	Low----------	High--------	Moderate.
Dn*. Dune land								
FaB--------------- Firmage	B	>60	---	---	---	Moderate-----	High--------	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
		In		In				
FbF---------------- Flygare	B	>60	---	---	---	Moderate-----	Moderate----	Moderate.
FcF*:								
Flygare----------	B	>60	---	---	---	Moderate-----	Moderate----	Moderate.
Parkay-----------	B	40-60	Hard	---	---	Moderate-----	High--------	Moderate.
Rock outcrop.								
FdF*:								
Flygare----------	B	>60	---	---	---	Moderate-----	Moderate----	Moderate.
Starley----------	D	7-20	Hard	---	---	Low----------	High--------	Moderate.
FeD, FeF---------- Fontreen	B	>60	---	---	---	Moderate-----	High--------	Low.
FfD*:								
Fontreen---------	B	>60	---	---	---	Moderate-----	High--------	Low.
Borvant----------	D	>60	---	16-20	Thick	Moderate-----	High--------	Moderate.
FgB, FgC---------- Freedom	C	>60	---	---	---	Moderate-----	High--------	Moderate.
FhB--------------- Fridlo	C	>60	---	---	---	High---------	High--------	High.
GaBP, GbA, GbB, GbC-------------- Genola	B	>60	---	---	---	High---------	High--------	Moderate.
GcA, GcB, GcC----- Genola	B	>60	---	---	---	High---------	High--------	Moderate.
GdDP-------------- Goldrun	A	>60	---	---	---	Low----------	High--------	Low.
GeD*:								
Goldrun----------	A	>60	---	---	---	Low----------	High--------	Low.
Cheebe-----------	D	>60	---	---	---	High---------	High--------	High.
GfD*:								
Goldrun----------	A	>60	---	---	---	Low----------	High--------	Low.
Medburn----------	B	>60	---	---	---	Low----------	High--------	Moderate.
GgD*:								
Goldrun----------	A	>60	---	---	---	Low----------	High--------	Low.
Rock outcrop.								
HaF--------------- Hamtah	C	>60	---	---	---	Moderate-----	High--------	Moderate.
HbA, HbB---------- Hansel	C	>60	---	---	---	Moderate-----	High--------	Moderate.
Hc---------------- Harding	D	>60	---	---	---	Low----------	High--------	High.
HdC, HdD, HdE----- Hiko Peak	B	>60	---	---	---	Moderate-----	High--------	Moderate.
HeC--------------- Hillfield	B	>60	---	---	---	High---------	High--------	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
		In		In				
HfC, HfD---------- Hupp	B	>60	---	---	---	Moderate-----	High---------	Moderate.
JaD--------------- Jericho	D	>60	---	14-20	Thin	Moderate-----	High---------	Moderate.
JbA, JbB, JbC, JcB, JcC--------- Juab	B	>60	---	---	---	Moderate-----	High---------	Moderate.
JdC*:								
Juab--------------	B	>60	---	---	---	Moderate-----	High---------	Moderate.
Juab, gravelly substratum------	B	>60	---	---	---	Moderate-----	High---------	Moderate.
JeD--------------- Justesen	C	>60	---	---	---	Moderate-----	High---------	Low.
KaB--------------- Keigley	B	>60	---	---	---	High---------	High---------	Low.
Kb---------------- Kirkham	C	>60	---	---	---	High---------	High---------	Moderate.
KcF*:								
Kitchell---------	B	>60	---	---	---	Moderate-----	High---------	Moderate.
Rock outcrop.								
LaA, LaB, LaC, LaD2------------- Linoyer	B	>60	---	---	---	Low----------	High---------	Moderate.
LbE, LbF, LcF----- Lizzant	B	>60	---	---	---	Moderate-----	High---------	Moderate.
LdE*, LdF*:								
Lodar------------	D	10-20	Hard	---	---	Moderate-----	High---------	Moderate.
Rock outcrop.								
LeF*:								
Lundy------------	D	10-20	Hard	---	---	Moderate-----	High---------	Moderate.
Rock outcrop.								
MaB, MbC2, McB---- Manassa	C	>60	---	---	---	Moderate-----	High---------	High.
MdB*:								
Manassa----------	C	>60	---	---	---	Moderate-----	High---------	High.
Mellor-----------	D	>60	---	---	---	Moderate-----	High---------	High.
MeC, MeD---------- Manila	C	>60	---	---	---	Moderate-----	High---------	Low.
MfA, MfB---------- Medburn	B	>60	---	---	---	Low----------	High---------	Moderate.
Mg---------------- Mellor	D	>60	---	---	---	Moderate-----	High---------	High.
Mh---------------- Mellor	D	>60	---	---	---	High---------	High---------	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
		In		In				
MkC---------------- Modoc	C	>60	---	20-40	Thin	Moderate-----	High---------	Moderate.
Mm----------------- Moroni	D	>60	---	---	---	Moderate-----	High---------	Moderate.
MnF---------------- Mortenson	C	>60	---	---	---	Moderate-----	Moderate-----	Moderate.
MoC---------------- Mountainville	B	>60	---	---	---	Moderate-----	High---------	Moderate.
MpB---------------- Mountainville	B	>60	---	---	---	Moderate-----	High---------	Low.
MrB*:								
Mountainville-----	B	>60	---	---	---	Moderate-----	High---------	Low.
Doyce-------------	C	>60	---	---	---	Moderate-----	High---------	Moderate.
MsD---------------- Mower	C	20-40	Soft	---	---	Moderate-----	High---------	Moderate.
MtF*:								
Mower-------------	C	20-40	Soft	---	---	Moderate-----	High---------	Moderate.
Rock outcrop.								
MuB, MuC, MvB, MvC--------------- Musinia	B	>60	---	---	---	High---------	High---------	Moderate.
NaB---------------- Nephi	C	>60	---	---	---	High---------	High---------	Moderate.
OaD, OaE----------- Orcky	B	>60	---	---	---	Moderate-----	High---------	Moderate.
PA*. Pachic Calcixerolls								
PB*. Pachic Haploxerolls								
PC*, PD*. Pachic Cryoborolls								
PeD*, PeF*:								
Parkay------------	B	40-60	Hard	---	---	Moderate-----	High---------	Moderate.
Rock outcrop.								
PfA, PfB, PfC------ Parleys	B	>60	---	---	---	High---------	High---------	Low.
PgC---------------- Pharo	B	>60	---	---	---	Moderate-----	High---------	Moderate.
PhD---------------- Pibler	D	>60	---	10-20	Thick	Moderate-----	High---------	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
		In		In				
PK*:								
Pits.								
Dumps.								
PmD---------------- Pober	C	>60	---	20-40	Thick	Moderate-----	High---------	Moderate.
PnD*:								
Pober------------	C	>60	---	20-40	Thick	Moderate-----	High---------	Moderate.
Pibler-----------	D	>60	---	10-20	Thick	Moderate-----	High---------	Moderate.
Po---------------- Provo Bay	D	>60	---	---	---	High---------	High---------	High.
Pp*:								
Provo Bay--------	D	>60	---	---	---	High---------	High---------	High.
Cheebe-----------	D	>60	---	---	---	High---------	High---------	High.
RaD, RaE---------- Reebok	D	>60	---	10-20	Thick	Moderate-----	High---------	Moderate.
RbC--------------- Renol	C	>60	---	20-40	Thick	Moderate-----	High---------	Moderate.
RcD*:								
Renol------------	C	>60	---	20-40	Thick	Moderate-----	High---------	Moderate.
Reebok-----------	D	>60	---	10-20	Thick	Moderate-----	High---------	Moderate.
RdE*:								
Reywat-----------	D	12-20	Hard	---	---	Moderate-----	Moderate----	Low.
Reebok-----------	D	>60	---	10-20	Thick	Moderate-----	High---------	Moderate.
Rock outcrop.								
ReE*, ReF*:								
Reywat-----------	D	12-20	Hard	---	---	Moderate-----	Moderate----	Low.
Rock outcrop.								
RF*.								
Rock outcrop								
RgF*:								
Rock outcrop.								
Amtoft-----------	D	10-20	Hard	---	---	Moderate-----	High---------	Moderate.
RhF*:								
Rock outcrop.								
Lodar------------	D	10-20	Hard	---	---	Moderate-----	High---------	Moderate.
RkF*:								
Rock outcrop.								
Lundy------------	D	10-20	Hard	---	---	Moderate-----	High---------	Moderate.
RmF*:								
Rock outcrop.								

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
		In		In				
RmF*:								
Saxby	D	5-20	Hard	---	---	Moderate	High	Moderate.
RnF*:								
Rock outcrop.								
Sheep Creek	C	24-28	Soft	---	---	Moderate	High	Moderate.
RoF*:								
Rock outcrop.								
Wallsburg	D	12-20	Hard	---	---	Moderate	Moderate	Low.
RpD Rofiss	B	>60	---	---	---	Moderate	High	Moderate.
Rr Roshe Springs	D	>60	---	---	---	High	High	Low.
RS*. Rubble land								
Sa Saltair	D	>60	---	---	---	High	High	High.
SbF Sandall	C	20-40	Hard	---	---	Moderate	High	Moderate.
ScD, ScF Sanpete	B	>60	---	---	---	Moderate	High	Moderate.
SdE*, SdF*, SeB*, SeF*:								
Saxby	D	5-20	Hard	---	---	Moderate	High	Moderate.
Rock outcrop.								
SfC, SfD, SfE, SgC Shabliss	D	>60	---	12-20	Thin	Moderate	High	Moderate.
ShE Sheep Creek	C	24-28	Soft	---	---	Moderate	High	Moderate.
ShF, SkF Sheep Creek	C	26-40	Hard	---	---	Moderate	High	Moderate.
SmE*:								
Sheep Creek	C	26-40	Hard	---	---	Moderate	High	Moderate.
Flygare	B	>60	---	---	---	Moderate	Moderate	Moderate.
SN*. Slickens								
SoD Spager	D	>60	---	10-20	Thick	Moderate	High	Moderate.
SpE*, SpF*:								
Starley	D	7-20	Hard	---	---	Low	High	Moderate.
Rock outcrop.								
SrE Sumine	C	20-40	Hard	---	---	Moderate	High	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
		In		In				
SsE*, SsF*:								
Sumine	C	20-40	Hard	---	---	Moderate	High	Moderate.
Reywat	D	12-20	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.								
TaA, TaB, TaC Taylorsville	C	>60	---	---	---	High	High	Moderate.
TbB Thiokol	C	>60	---	---	---	Moderate	High	Moderate.
TcC*:								
Thiokol	C	>60	---	---	---	Moderate	High	Moderate.
Linoyer	B	>60	---	---	---	Low	High	Moderate.
TdB Truesdale	B	>60	---	20-40	Thin	High	High	Moderate.
TE*. Typic Cryoborolls								
TF*. Typic Haploborolls								
WaB, WbB Wales	B	>60	---	---	---	Moderate	High	Moderate.
WcF*:								
Wallsburg	D	12-20	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.								
WdE*, WdF*:								
Wallsburg	D	12-20	Hard	---	---	Moderate	Moderate	Low.
Yeates Hollow	C	>60	---	---	---	Moderate	High	Moderate.
WeB, WfA, WfB, WfC Woodrow	C	>60	---	---	---	High	High	Moderate.
XA*. Xerertic Torriorthents								
XB*:								
Xeric Torriorthents.								
Rock outcrop.								
YaC, YaD, YaE Yeates Hollow	C	>60	---	---	---	Moderate	High	Moderate.
YbF Yeates Hollow	C	>60	---	---	---	Moderate	High	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS

[Laboratory analyses made by the Soil Conservation Service at the Riverside Laboratory, Riverside, California, and at the National Soils Laboratory at Lincoln, Nebraska[1]]

Soil	Horizon	Depth	Size class and diameter of particles: Total: Sand	Total: Silt	Total: Clay[2]	Sand fraction: Very coarse	Sand fraction: Coarse	Sand fraction: Medium	Sand fraction: Fine	Sand fraction: Very fine	Coarse fragments [by weight]
		In	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct
Cheebe silty clay loam	A11	0-2	28.1	60.7	11.2	1.8	1.6	1.2	6.8	16.7	--
	A12	2-4	24.2	58.9	16.9	0.6	0.7	1.0	7.3	14.6	--
	A13	4-8	21.1	57.9	21.0	0.2	0.4	0.4	5.8	14.3	--
	B1	8-15	3.8	36.7	59.5	---	0.2	0.2	1.0	2.4	--
	B21t	15-20	1.6	40.8	57.6	---	0.1	0.3	0.3	0.9	--
	B22t	20-31	5.0	56.0	39.0	---	0.1	0.2	1.5	3.2	--
	B3ca	31-44	15.8	46.1	38.1	---	1.8	2.5	6.6	4.9	2
	C1ca	44-55	3.1	39.0	57.9	---	---	---	0.4	2.7	--
	C2	55-65	36.1	49.1	14.8	1.3	1.4	2.3	12.7	18.4	34
[3]Genola silt loam	A11	0-1	28.6	52.1	19.3	0.2	0.8	1.8	7.8	18.0	--
	A12	1-6	27.3	51.4	21.3	0.1	0.7	1.7	7.4	17.4	--
	C1	6-15	28.0	52.5	19.5	---	0.3	0.7	4.6	22.4	--
	C2	15-29	23.6	55.7	20.7	---	0.2	0.6	3.8	19.0	--
	C3	29-42	14.1	62.5	23.4	---	0.1	0.4	1.9	11.7	--
	C4	42-60	19.9	57.3	22.8	---	0.2	0.5	2.9	16.3	--
[3]Hiko Peak stony sandy loam	A11	0.2	49.5	40.1	10.4	2.2	1.9	1.5	9.4	34.5	7
	A12	2-5	45.4	38.6	16.0	2.4	2.8	1.8	8.5	29.9	4
	B21	5-10	46.1	40.0	13.9	3.0	2.5	1.5	8.6	30.5	4
	B22	10-15	42.0	43.8	14.2	1.9	2.1	1.6	8.1	28.3	9
	C1ca	15-32	45.0	40.7	14.3	9.7	6.6	3.8	7.4	17.5	33
	C2ca	32-41	64.4	26.3	9.3	24.4	11.1	4.7	8.0	16.2	41
	C3	41-60	---	---	---	---	---	---	---	---	48
Jericho gravelly fine sandy loam	A11	0-5	70.5	14.6	14.9	4.1	2.9	7.4	34.5	21.6	29
	B2	5-9	64.8	22.8	12.4	7.3	3.4	7.7	26.7	19.7	57
	C1ca	9-13	59.7	25.8	14.5	10.2	5.0	8.4	23.0	13.1	60
	C2sica	13-19	57.9	26.4	15.7	13.3	5.9	9.8	19.5	9.4	54
	C3sicam	19-30	---	---	---	---	---	---	---	---	--
	IIC4	30-42	92.8	7.2	[4]TR	31.6	12.4	14.2	28.7	5.9	55
Juab loam	A11	0-4	43.1	41.7	15.2	1.3	1.4	1.2	7.1	32.0	--
	A12	4-8	---	---	---	---	---	---	---	---	--
	A13	8-13	36.1	45.3	18.6	0.6	0.9	1.3	7.1	26.2	--
	C1	13-21	---	---	---	---	---	---	---	---	--
	C2	21-29	49.0	35.0	16.0	1.6	3.0	3.1	10.8	30.5	--
	C3	29-38	43.8	39.8	16.4	2.8	2.5	2.1	8.4	28.0	--
	C4	38-60	24.7	54.7	20.6	0.7	0.7	0.8	3.7	18.8	--
[3]Justesen loam	A11	0-3	40.0	40.3	19.7	5.0	2.8	2.5	6.6	23.1	4
	A12	3-5	40.5	38.3	21.2	2.1	2.2	2.2	7.5	26.5	--
	B1	5-18	39.0	38.2	22.8	6.0	3.0	2.1	5.3	22.6	--
	B21t	18-53	34.6	40.3	25.1	1.8	1.4	1.6	5.2	24.6	3
	B22t	53-27	34.4	41.6	24.0	6.5	2.4	1.8	4.3	19.4	8
	B3ca	27-36	32.6	44.1	23.3	3.6	2.7	2.4	5.6	18.3	7
	C1ca	36-40	40.6	33.7	25.7	14.9	9.7	3.4	4.1	8.5	3
	C2ca	40-60	44.1	32.9	23.0	12.2	8.6	4.9	7.1	11.3	7
[3]Lodar very cobbly loam	A11	0-3	27.0	52.4	20.6	3.5	1.8	1.3	4.4	16.0	50
	A12	3-7	25.1	49.5	25.4	3.3	2.3	1.7	4.9	12.9	43
	A13	7-11	24.9	47.7	27.4	2.9	2.3	1.9	4.8	13.0	43
	C1ca	11-16	24.5	50.2	25.3	1.3	1.6	1.9	5.7	14.0	48
	C2ca	16-19	26.8	42.6	30.6	4.1	2.6	2.2	5.4	12.5	53
	R	19-25	---	---	---	---	---	---	---	---	--

See footnotes at end of table.

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil	Horizon	Depth	Size class and diameter of particles								Coarse fragments [by weight]
			Total			Sand fraction					
			Sand	Silt	Clay[2]	Very coarse	Coarse	Medium	Fine	Very fine	
		In	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct
[3]Lundy very cobbly loam	A11	0-2	26.6	49.4	24.0	2.5	1.8	1.1	4.0	17.2	69
	A12	2-6	24.6	50.5	24.9	2.8	1.2	0.7	3.8	16.1	55
	A13	6-10	26.9	55.1	18.0	5.7	2.2	1.3	4.6	13.1	57
	C1ca	10-15	35.3	41.3	23.4	12.8	6.4	3.4	6.2	6.5	77
	C2ca	15-19	36.3	35.7	28.0	13.8	6.3	3.2	6.3	6.7	80
	R	19	---	---	---	---	---	---	---	---	--
Medburn fine sandy loam	A11	0-4	59.0	29.9	11.1	7.5	6.5	4.9	13.6	26.5	14
	A12	4-8	54.5	34.8	10.7	5.2	5.7	4.9	12.8	25.9	12
	C1	8-15	52.7	35.8	11.5	5.1	5.5	4.5	13.1	24.5	14
	C2	15-24	52.7	38.4	8.9	7.0	6.5	5.9	12.9	20.4	23
	C3	24-32	57.0	31.5	11.5	7.8	5.5	4.9	13.2	25.6	13
	C4	32-41	62.3	27.4	10.3	16.2	15.1	8.0	9.7	13.3	22
	C5	41-60	50.2	41.1	8.7	3.8	4.2	4.1	11.8	26.3	7
Modoc fine sandy loam, cool	A11	0-2	60.7	30.7	8.6	5.4	5.7	6.1	15.2	28.3	10
	A12	2-4	49.5	36.3	14.2	3.9	3.2	3.9	12.7	25.8	10
	B1	4-8	41.7	37.9	20.4	1.8	2.4	3.0	10.9	23.6	7
	B2t	8-16	49.7	34.2	16.1	2.2	3.2	3.9	12.3	28.1	11
	C1si	16-30	56.6	33.4	13.0	4.1	5.7	6.8	13.4	23.6	7
	C2sica	30-39	45.0	43.7	11.3	4.5	8.3	7.1	10.0	15.1	--
	C3sicam	39-45	---	---	---	---	---	---	---	---	--
	C4si	45-60	55.0	37.3	7.7	3.3	2.7	3.4	15.0	30.6	41
Nephi silt loam	Ap	0-9	27.9	46.3	25.8	0.3	1.0	1.7	11.9	13.0	1
	B21t	9-17	17.7	45.8	36.5	---	0.4	1.0	6.8	9.5	TR
	B22t	17-23	15.3	45.7	39.0	---	0.5	1.0	6.1	7.7	--
	B31t	23-31	20.4	43.8	35.8	0.1	0.6	1.8	8.2	9.7	TR
	B32tca	31-42	25.6	44.7	29.7	0.2	0.9	2.2	10.2	12.1	TR
	C1ca	42-60	25.4	59.8	14.8	0.1	0.6	1.8	10.0	12.9	--
[3]Pober fine sandy loam	A11	0-4	55.8	30.2	14.0	2.1	2.8	5.5	15.7	29.7	13
	A12	4-9	49.7	27.9	22.4	0.6	1.9	4.9	16.3	26.0	12
	C1ca	9-13	48.3	32.3	19.4	1.1	2.2	4.9	14.5	25.6	12
	C2ca	13-18	45.8	32.3	21.9	2.3	2.8	5.2	14.9	20.6	34
	C3ca	18-24	47.2	26.4	26.4	5.6	4.8	6.1	14.1	16.6	49
	C4cam	24-28	---	---	---	---	---	---	---	---	--
Reebok cobbly loam	A11	0-2	36.0	48.0	16.0	3.8	3.5	2.4	7.7	18.6	34
	A12	2-5	30.7	47.8	21.5	3.3	3.1	1.9	6.0	16.4	38
	B2t	5-11	28.1	45.4	26.5	3.1	2.6	1.4	4.7	16.3	26
	B3ca	11-15	25.4	47.7	26.9	4.4	2.6	1.5	4.6	12.3	23
	C1ca	15-19	---	---	---	---	---	---	---	---	--
	C2cam	19-23	---	---	---	---	---	---	---	---	--
Renol stony fine sandy loam	A11	0-3	68.9	17.4	13.7	4.0	10.7	12.3	20.6	21.3	26
	A12	3-9	65.7	18.6	15.7	4.3	10.6	12.1	19.8	18.9	27
	B2t	9-17	58.3	18.9	22.8	3.2	8.5	11.8	17.6	17.2	50
	B3ca	17-27	43.2	19.0	37.8	5.7	10.3	9.2	10.9	7.1	66
	C1cam	27-29	---	---	---	---	---	---	---	---	--
[3]Reywat very stony loam	A11	0-3	32.6	46.6	20.8	4.8	5.7	3.5	7.1	11.5	59
	A12	3-8	24.1	42.1	33.8	3.0	3.6	2.5	5.4	9.6	39
	B2t	8-15	30.3	37.6	32.1	6.0	4.2	2.9	6.5	10.7	64
	B3t	15-19	49.8	23.0	27.2	19.2	9.8	4.8	8.5	7.5	87
	R	19-25	---	---	---	---	---	---	---	---	--

See footnotes at end of table.

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil	Horizon	Depth	Size class and diameter of particles: Total: Sand	Total: Silt	Total: Clay[2]	Sand fraction: Very coarse	Sand fraction: Coarse	Sand fraction: Medium	Sand fraction: Fine	Sand fraction: Very fine	Coarse fragments [by weight]
		In	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct
[3]Shabliss very fine sandy loam	A11	0-2	50.3	38.2	11.5	5.3	3.7	4.1	11.3	25.9	9
	A12	2-6	50.5	33.6	15.9	2.2	4.0	5.3	13.1	25.9	--
	B21	6-11	51.3	30.8	17.9	3.2	6.3	6.6	13.3	21.9	4
	B22	11-14	49.9	30.7	19.4	3.1	5.7	7.1	13.7	20.3	3
	C1sica	14-22	34.3	38.2	27.5	2.4	4.7	4.2	8.6	14.4	--
	C2sica	22-31	29.2	45.4	25.4	0.7	2.4	2.9	8.4	14.8	1
	C3sica	31-44	53.3	30.8	15.9	0.2	1.8	6.4	19.9	25.0	7
	C4	44-60	66.5	23.9	9.6	0.7	2.0	8.0	27.6	28.2	--
[3]Sheep Creek very cobbly loam	A11	0-2	36.3	38.3	23.6	4.0	2.1	1.9	7.4	20.9	16
	A12	2-7	36.3	37.7	25.4	3.6	1.5	1.6	7.4	22.2	5
	B21t	7-11	31.0	37.7	31.3	3.2	2.2	2.0	6.5	17.1	10
	B22t	11-18	26.5	31.8	41.7	2.3	1.3	1.4	5.5	16.0	20
	B31ca	18-27	37.0	31.3	31.7	4.3	4.0	4.0	8.9	15.8	1
	B32ca	27-32	45.8	29.1	25.1	12.2	8.9	4.3	7.7	12.7	3
	Cca	32-38	---	---	---	---	---	---	---	---	--
	R	38	---	---	---	---	---	---	---	---	--
[3]Spager gravelly loam	A11	0-2	47.2	34.4	18.4	5.3	3.6	2.5	8.7	27.1	20
	A12	2-4	37.4	34.5	28.1	4.0	3.5	3.0	7.0	19.9	26
	C1ca	4-9	39.6	31.0	29.4	7.4	4.6	3.3	8.7	15.6	44
	C2ca	9-13	49.4	20.1	30.5	12.7	7.3	5.2	12.1	12.1	65
	C3ca	13-19	58.3	17.3	24.4	17.6	7.6	5.4	13.3	14.4	64
	C4cam	19-22	---	---	---	---	---	---	---	---	--
	C5	22-26	65.0	18.9	16.1	23.9	8.2	4.9	13.0	15.0	64
Sumine very cobbly loam	A11	0-2	39.5	40.0	20.5	9.1	6.1	3.8	7.8	12.7	18
	A12	2-5	43.4	37.9	18.7	9.5	6.7	4.4	9.0	13.8	14
	B21t	5-9	36.6	32.4	31.0	5.7	7.2	4.4	7.1	12.2	11
	B22t	9-15	27.7	37.1	35.2	5.3	4.5	2.5	4.9	10.5	5
	B31t	15-20	29.6	29.3	41.1	3.6	3.9	6.7	5.8	9.6	2
	B32t	20-26	35.7	32.0	32.3	5.7	7.2	4.5	8.7	9.6	2
	Cr	26-30	---	---	---	---	---	---	---	---	--
Truesdale fine stony loam	A11	0-3	64.8	23.3	11.9	0.2	0.5	1.8	20.9	41.4	TR
	A12	3-9	48.2	33.7	18.1	TR	0.3	1.3	12.6	34.0	--
	B21	9-17	46.8	36.3	16.9	0.2	0.5	1.6	12.3	32.2	TR
	B22	17-25	46.2	35.2	18.6	0.9	0.9	2.5	13.6	28.3	1
	C1sic	25-30	---	---	---	---	---	---	---	---	--
	C2sic	30-46	---	---	---	---	---	---	---	---	--
	C3sic	46-60	---	---	---	---	---	---	---	---	--

[1]All analyses were made on fractions of less than 2 millimeters except the coarse fragment determinations.

[2]Determination of the percentage of clay includes mineral clay and calcium carbonate particles of clay size. The symbol < means less than.

[3]Representative profile but not the typical one.

[4]TR means trace.

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS

[Laboratory analyses made by the Soil Conservation Service at the Riverside Laboratory, Riverside, California, and at the National Soils Laboratory at Lincoln, Nebraska]

Soil	Horizon	Depth	Organic carbon	Calcium carbon-ate equiva-lent	Water content	Reaction		Cation exchange capacity	Exchangeable bases		Sodium absorp-tion ratio SAR	Electrical conduc-tivity
					15 atmo-spheres	Satu-rated paste	1:1 suspen-sion		Sodium	Potassium		
		In	Pct	Pct	Pct	pH	pH	Meq per 100 g	Meq per 100 g	Meq per 100 g		Mmhos Per cm
Cheebe silty clay loam	A11	0-2	3.54	21	12.1	7.6	8.1	19.5	1.4	2.8	--	3.21
	A12	2-4	1.59	24	10.0	7.8	8.7	16.4	1.2	3.5	--	1.91
	A13	4-8	1.18	25	11.1	8.0	9.0	17.0	3.3	3.2	--	2.71
	B1	8-15	1.13	50	19.6	7.7	8.3	18.6	5.3	2.2	--	3.32
	B21t	15-20	0.86	46	18.7	7.8	8.3	17.7	7.1	1.6	38	4.65
	B22t	20-31	0.52	40	18.8	8.2	8.6	18.4	6.5	0.8	35	3.95
	B3ca	31-44	0.41	51	18.3	8.3	8.6	18.2	8.7	0.5	29	7.20
	C1ca	44-55	0.65	44	16.8	8.2	8.3	15.4	8.0	0.7	25	12.60
	C2	55-65	1.80	29	22.4	8.4	8.6	23.0	13.2	1.4	21	14.70
[1]Genola silt loam	A11	0-1	1.01	6	--	8.2	8.5	21.1	1.5	3.6	--	1.13
	A12	1-6	0.70	6	--	8.3	8.8	22.9	1.1	6.0	--	0.78
	C1	6-15	0.50	10	--	8.2	8.6	20.9	0.9	2.8	--	0.80
	C2	15-29	0.42	9	--	8.0	8.5	21.5	5.7	0.4	20	6.25
	C3	29-42	0.33	7	--	7.6	8.0	20.3	3.5	0.5	17	10.30
	C4	42-60	0.25	8	--	7.6	8.0	15.6	3.5	0.6	23	25.88
[1]Hiko Peak stony sandy loam	A11	0-2	1.15	15	7.1	7.7	7.9	13.4	0.1	1.9	1	0.63
	A12	2-5	0.86	18	9.3	7.6	8.3	14.6	0.1	2.3	TR[2]	1.91
	B21	5-10	0.65	19	9.0	7.7	8.3	13.6	0.1	2.0	TR	0.59
	B22	10-15	0.54	22	9.1	7.8	8.3	13.5	1.9	2.4	10	2.95
	C1ca	15-32	0.47	40	10.0	8.2	8.5	8.7	9.2	1.0	31	16.70
	C2ca	32-41	0.33	45	6.7	8.5	8.7	5.9	7.7	0.5	32	17.70
	C3	41-60	0.07	51	4.8	8.3	8.8	4.3	5.7	0.3	37	19.80
Jericho gravelly fine sandy loam	A11	0-5	0.78	6	6.4	--	8.4	12.1	0.1	0.9	--	--
	B2	5-9	0.79	10	8.5	--	8.4	13.1	0.1	1.1	--	--
	C1ca	9-13	0.78	17	9.9	--	8.4	12.1	TR	1.1	--	--
	C2sica	13-19	0.60	21	9.6	--	8.4	10.8	0.1	1.1	--	--
	C3sicam	19-30	--	--	--	--	--	--	--	--	--	--
	IIC4	30-42	0.09	1	3.8	7.8	8.2	9.0	0.7	0.7	3	3.15
Juab loam	A11	0-4	1.69	8	8.1	7.8	8.2	15.4	0.1	2.7	TR	1.73
	A12	4-8	0.81	8	10.0	7.7	8.2	17.3	0.1	2.6	TR	0.89
	A13	8-13	0.89	14	9.9	7.4	8.2	16.3	0.1	1.9	TR	0.98
	C1	13-21	0.36	19	8.6	7.4	8.2	13.1	0.1	1.0	TR	0.83
	C2	21-29	0.49	21	7.8	7.7	8.4	11.0	0.1	0.7	1	0.76
	C3	29-38	0.34	22	8.0	7.8	8.4	12.0	0.4	0.7	2	0.74
	C4	38-60	0.30	18	12.0	8.3	9.2	16.4	0.5	0.8	36	2.43
[1]Justesen loam	A11	0-3	1.84	TR	9.7	--	8.0	22.9	0.1	1.8	--	--
	A12	3-5	1.44	TR	10.2	--	7.9	22.7	0.1	1.3	--	--
	B1	5-18	0.79	TR	10.5	--	8.0	22.9	0.1	1.1	--	--
	B21t	18-53	0.92	TR	11.5	--	7.9	24.7	0.1	0.7	--	--
	B22t	53-27	0.88	2	11.9	7.4	8.0	22.5	0.1	0.5	TR	0.56
	B3ca	27-36	0.70	13	12.3	7.6	8.3	21.2	0.1	0.4	TR	0.42
	C1ca	36-40	0.45	45	11.6	7.7	8.4	12.9	0.2	0.2	1	0.46
	C2ca	40-60	0.32	59	10.6	7.9	8.4	8.9	0.3	0.2	1	0.57
[1]Lodar very cobbly loam	A11	0-3	2.17	22	10.4	7.7	8.3	17.8	0.1	0.8	TR	0.90
	A12	3-7	2.30	30	13.1	7.8	8.3	19.0	0.1	0.5	TR	0.52
	A13	7-11	1.98	36	15.8	7.8	8.3	17.7	0.1	0.4	TR	0.46
	C1ca	11-16	2.21	34	17.9	7.8	8.4	17.0	0.1	0.3	TR	0.47
	C2ca	16-19	2.44	48	19.0	7.7	8.3	16.3	0.1	0.3	TR	0.57
	R	19-25	--	--	--	--	--	--	--	--	--	--

See footnotes at end of table.

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil	Horizon	Depth	Organic carbon	Calcium carbonate equivalent	Water content	Reaction		Cation exchange capacity	Exchangeable bases		Sodium absorption ratio SAR	Electrical conductivity
					15 atmospheres	Saturated paste	1:1 suspension		Sodium	Potassium		
		In	Pct	Pct	Pct	pH	pH	Meq per 100 g	Meq per 100 g	Meq per 100 g		Mmhos Per cm
[1]Lundy very cobbly loam	A11	0-2	6.02	2	17.0	7.0	7.5	32.9	0.1	1.8	TR	2.32
	A12	2-6	3.95	4	14.6	7.3	7.9	29.2	TR	1.6	TR	1.32
	A13	6-10	2.71	13	13.7	7.5	8.2	23.9	TR	0.9	TR	0.83
	C1ca	10-15	1.32	73	13.8	7.6	8.2	9.0	TR	0.2	TR	0.58
	C2ca	15-19	1.42	71	14.0	7.6	8.3	7.9	TR	0.2	TR	0.61
	R	19	--	--	--	--	--	--	--	--	--	--
Medburn fine sandy loam	A11	0-4	0.49	3	5.8	8.2	8.4	13.0	0.1	2.1	1	0.83
	A12	4-8	0.33	6	6.8	--	8.6	13.9	0.1	3.1	--	--
	C1	8-15	0.29	10	6.8	--	8.6	13.2	0.1	2.0	--	--
	C2	15-24	0.24	10	6.4	--	8.7	12.3	0.2	1.6	--	--
	C3	24-32	0.22	11	6.4	8.3	8.9	12.9	0.9	1.4	5	0.79
	C4	32-41	0.13	7	6.1	8.1	8.8	12.3	3.8	0.8	18	6.00
	C5	41-60	0.10	7	7.0	7.8	8.2	14.5	9.2	0.7	26	17.32
Modoc fine sandy loam, cool	A11	0-2	1.26	--	6.8	7.4	7.7	14.4	0.1	1.7	TR	1.03
	A12	2-4	0.79	TR	8.2	7.0	7.5	17.3	0.1	1.8	TR	0.40
	B1	4-8	0.57	TR	10.4	7.0	7.5	22.7	0.1	2.3	TR	0.44
	B2t	8-16	0.37	--	9.3	7.3	7.6	20.7	0.1	2.6	1	0.66
	C1si	16-30	0.16	6	8.6	7.8	8.3	14.6	0.4	2.3	2	0.65
	C2sica	30-39	0.41	15	10.1	8.5	9.1	15.0	5.4	2.6	26	2.37
	C3sicam	39-45	--	--	--	--	--	--	--	--	--	--
	C4si	45-60	0.07	15	8.2	8.2	8.7	15.4	6.3	2.3	22	6.30
Nephi silt loam	Ap	0-9	1.09	1	11.1	--	8.3	22.6	0.1	2.2	--	--
	B21t	9-17	0.75	5	13.6	--	8.3	25.3	0.1	1.9	--	--
	B22t	17-23	0.71	15	14.7	--	8.3	22.8	0.1	1.3	--	--
	B31t	23-31	0.62	20	12.8	--	8.4	19.2	0.1	0.7	--	--
	B32tca	31-42	0.40	19	10.9	--	8.2	16.9	0.1	0.5	--	--
	C1ca	42-60	0.23	24	6.3	--	8.6	10.7	0.1	0.3	--	--
[1]Pober fine sandy loam	A11	0-4	1.84	3	6.4	7.6	8.0	15.7	0.1	1.6	TR	1.45
	A12	4-9	1.21	8	9.6	7.9	8.4	16.1	0.1	2.8	TR	0.79
	C1ca	9-13	0.61	12	9.4	8.0	8.7	13.4	0.1	2.3	TR	0.49
	C2ca	13-18	0.51	16	10.8	--	8.5	12.9	0.1	1.3	--	--
	C3ca	18-24	0.68	42	12.5	8.2	8.5	9.5	0.3	0.5	1	0.46
	C4cam	24-28	--	65	--	--	--	--	--	--	--	--
Reebok cobbly loam	A11	0-2	2.39	TR	10.1	--	7.6	24.2	0.1	2.6	--	--
	A12	2.5	1.17	TR	10.7	--	7.6	26.2	0.1	2.4	--	--
	B2t	5-11	1.12	TR	12.8	7.2	7.9	29.3	0.1	1.9	TR	0.50
	B3ca	11-15	1.53	14	16.2	7.5	8.0	27.5	0.1	1.2	TR	0.58
	C1ca	15-19	2.37	53	20.8	--	8.1	--	--	--	--	--
	C2cam	19-23	--	92	--	--	--	--	--	--	--	--
Renol stony fine sandy loam	A11	0-3	1.03	TR	5.0	7.4	7.8	9.9	TR	1.1	TR	1.74
	A12	3-9	0.78	TR	7.5	--	8.0	11.4	TR	0.8	--	--
	B2t	9-17	0.65	2	16.3	--	8.1	15.0	0.1	1.0	--	--
	B3ca	17-27	--	45	6.4	7.7	8.3	10.2	0.1	0.3	TR	0.58
	C1cam	27-29	--	34	--	--	--	--	--	--	--	--

See footnotes at end of table.

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil	Horizon	Depth	Organic carbon	Calcium carbon-ate equiva-lent	Water content	Reaction		Cation exchange capacity	Exchangeable bases		Sodium absorp-tion ratio SAR	Electrical conduc-tivity
					15 atmo-spheres	Satu-rated paste	1:1 suspen-sion		Sodium	Potassium		
		In	Pct	Pct	Pct	pH	pH	Meq per 100 g	Meq per 100 g	Meq per 100 g		Mmhos Per cm
[1]Reywat very stony loam	A11	0-3	1.34	--	10.9	--	7.4	23.8	0.1	2.3	--	--
	A12	3-8	0.79	--	15.1	--	7.5	31.1	0.1	3.3	--	--
	B2t	8-15	0.72	--	16.1	--	7.6	33.6	0.1	3.0	--	--
	B3t	15-19	0.73	--	17.2	--	7.7	37.7	0.2	2.0	--	--
	R	19-25	--	--	--	--	--	--	--	--	--	--
[1]Shabliss very fine sandy loam	A11	0-2	1.26	TR	7.8	7.8	8.3	15.4	0.1	1.6	1	1.07
	A12	2-6	0.81	11	9.2	7.9	8.3	15.4	0.1	1.8	TR	0.52
	B21	6-11	1.20	17	9.5	7.9	8.2	13.8	0.1	1.3	TR	0.59
	B22	11-14	0.46	23	9.7	7.9	8.3	12.2	0.2	0.5	1	0.52
	C1sica	14-22	0.49	26	12.1	8.0	8.4	7.3	3.1	0.2	20	4.17
	C2sica	22-31	0.29	53	12.2	8.1	8.3	7.2	7.3	0.3	28	11.50
	C3sica	31-44	0.07	28	7.2	8.4	8.5	6.8	5.7	0.3	27	10.70
	C4	44-60	--	27	4.4	8.6	8.9	5.3	3.8	0.3	29	8.60
[1]Sheep Creek very cobbly loam	A11	0-2	3.64	1	14.4	--	7.6	--	0.1	2.3	--	--
	A12	2-7	3.04	1	13.3	--	7.7	--	0.1	1.6	--	--
	B21t	7-11	1.95	1	14.5	--	7.7	--	0.1	1.0	--	--
	B22t	11-18	1.22	1	18.4	7.2	7.6	--	0.1	0.9	TR	0.59
	B31ca	18-27	0.97	34	16.9	7.5	8.0	--	0.1	0.5	TR	0.54
	B32ca	27-32	0.72	44	17.8	7.5	8.1	--	0.1	0.5	TR	0.52
	Cca	32-38	0.56	26	18.3	7.5	8.2	--	0.2	0.7	1	0.49
	R	38	--	--	--	--	--	--	--	--	--	--
[1]Spager gravelly loam	A11	0-2	1.55	20	10.5	7.4	8.2	15.2	TR	1.8	TR	1.30
	A12	2-4	1.10	30	14.2	7.8	8.4	15.6	0.1	1.5	TR	0.42
	C1ca	4-9	1.06	63	15.6	7.7	8.3	9.3	0.1	0.9	TR	0.40
	C2ca	9-13	0.92	78	18.5	7.9	8.4	4.1	0.1	0.3	TR	0.42
	C3ca	13-19	0.84	66	20.3	8.0	8.6	3.3	0.7	0.3	4	1.22
	C4cam	19-22	--	51	--	--	--	--	--	--	--	--
	C5	22-26	0.70	59	16.3	8.2	8.7	4.1	1.6	0.3	8	2.44
Sumine very cobbly loam	A11	0-2	2.07	--	11.6	--	7.6	24.4	0.1	2.7	--	--
	A12	2-5	5.27	--	10.3	--	7.7	21.6	0.1	1.7	--	--
	B21t	5-9	1.12	--	12.3	--	7.7	25.8	0.1	1.3	--	--
	B22t	9-15	0.88	--	15.4	--	7.6	31.8	0.2	1.6	--	--
	B31t	15-20	0.72	--	20.7	--	7.6	41.2	0.2	1.7	--	--
	B32t	20-26	0.97	--	22.8	--	7.5	51.1	0.4	1.6	--	--
	Cr	26-30	--	--	--	--	--	--	--	--	--	--
Truesdale fine sandy loam	A11	0-3	0.58	5	5.3	8.0	8.3	10.8	0.3	2.5	1	1.11
	A12	3-9	0.35	9	8.2	8.3	8.7	13.9	0.5	4.1	3	0.55
	B21	9-17	0.27	3	7.8	8.3	9.0	14.8	1.1	3.9	6	0.64
	B22	17-25	0.23	9	8.6	8.5	9.4	14.6	5.2	2.5	31	1.94
	C1sic	25-30	--	27	--	--	--	--	--	--	--	--
	C2sic	30-46	--	35	--	--	--	--	--	--	--	--
	C3sic	46-60	--	40	--	--	--	--	--	--	--	--

[1]Representative profile but not the typical one.

[2]TR means trace.

TABLE 19.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Agassiz	Loamy-skeletal, mixed, frigid Lithic Haploxerolls
Amtoft	Loamy-skeletal, carbonatic, mesic Lithic Xerollic Calciorthids
Ant Flat	Fine, montmorillonitic, frigid Calcic Argixerolls
Ashdown	Fine-loamy, mixed (calcareous), mesic Xeric Torrifluvents
Atepic	Loamy, carbonatic, mesic, shallow Xerollic Calciorthids
Benjamin	Fine, montmorillonitic, mesic Fluvaquentic Haplustolls
Bezzant	Loamy-skeletal, mixed, frigid Typic Calcixerolls
Birdow	Fine-loamy, mixed, mesic Cumulic Haploxerolls
Borvant	Loamy-skeletal, carbonatic, mesic, shallow Aridic Petrocalcic Palexerolls
Bramwell	Fine-silty, mixed, mesic Aquic Calciorthids
Broadhead	Fine, montmorillonitic, frigid Pachic Argixerolls
Calita	Fine-loamy, mixed, mesic Aridic Calcixerolls
Calpac	Loamy-skeletal, mixed, frigid Calcic Pachic Haploxerolls
Checkett	Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids
Cheebe	Fine, carbonatic, mesic Xerollic Natrargids
Dagor	Fine-loamy, mixed, mesic Cumulic Haploxerolls
Deer Creek	Fine, montmorillonitic, frigid Typic Palexerolls
Donnardo	Loamy-skeletal, mixed, mesic Aridic Calcixerolls
Doyce	Fine-loamy, mixed, mesic Aridic Calcic Argixerolls
Dry Creek	Fine, montmorillonitic, mesic Typic Palexerolls
Duggins	Fine, mixed (calcareous), mesic Xeric Torrifluvents
Firmage	Fine-loamy, mixed, mesic Xerollic Calciorthids
Flygare	Loamy-skeletal, mixed Cryic Pachic Paleborolls
Fontreen	Loamy-skeletal, carbonatic, frigid Aridic Calcixerolls
Freedom	Fine-silty, mixed, mesic Xerollic Calciorthids
Fridlo	Fine-silty, mixed, mesic Typic Natrixerolls
Genola	Fine-silty, mixed (calcareous), mesic Xeric Torrifluvents
Goldrun	Mixed, mesic Xeric Torripsamments
Hamtah	Clayey-skeletal, montmorillonitic Argic Pachic Cryoborolls
Hansel	Fine-silty, mixed, mesic Xerollic Haplargids
Harding	Fine, mixed, mesic Xerollic Natrargids
Hiko Peak	Loamy-skeletal, mixed, mesic Xerollic Calciorthids
Hillfield	Coarse-silty, mixed, mesic Calcixerollic Xerochrepts
Hupp	Loamy-skeletal, mixed, mesic Calcic Haploxerolls
Jericho	Loamy-skeletal, mixed, mesic, shallow Xerollic Durorthids
Juab	Fine-loamy, mixed, mesic Torrifluventic Haploxerolls
Justesen	Fine-loamy, mixed, frigid Calcic Argixerolls
Keigley	Fine-silty, mixed, mesic Cumulic Haploxerolls
Kirkham	Fine-silty, mixed, mesic Fluvaquentic Haplustolls
Kitchell	Loamy-skeletal, carbonatic Calcic Pachic Cryoborolls
Linoyer	Coarse-silty, mixed (calcareous), mesic Xeric Torrifluvents
Lizzant	Loamy-skeletal, carbonatic, frigid Typic Calcixerolls
Lodar	Loamy-skeletal, carbonatic, mesic Lithic Calcixerolls
Lundy	Loamy-skeletal, carbonatic, frigid Lithic Calcixerolls
Manassa	Fine-silty, mixed (calcareous), mesic Xeric Torriorthents
Manila	Fine, montmorillonitic, frigid Typic Argixerolls
Medburn	Coarse-loamy, mixed (calcareous), mesic Xeric Torrifluvents
Mellor	Fine-silty, mixed, mesic Xerollic Natrargids
Modoc	Fine-loamy, mixed, mesic Aridic Durixerolls
Moroni	Fine, montmorillonitic, mesic Entic Chromoxererts
Mortenson	Clayey-skeletal, montmorillonitic Typic Paleboralfs
Mountainville	Loamy-skeletal, mixed, mesic Aridic Calcic Argixerolls
Mower	Fine-loamy, carbonatic, frigid Typic Calcixerolls
Musinia	Fine-silty, mixed, mesic Torrifluventic Haploxerolls
Nephi	Fine-silty, mixed, mesic Calcic Argixerolls
Orcky	Coarse-loamy over sandy or sandy skeletal, mixed, mesic Xerollic Calciorthids
Parkay	Loamy-skeletal, mixed Argic Pachic Cryoborolls
Parleys	Fine-silty, mixed, mesic Calcic Argixerolls
Pharo	Loamy-skeletal, carbonatic, mesic Aridic Calcixerolls
Pibler	Loamy-skeletal, mixed, mesic, shallow Xerollic Paleorthids
Pober	Loamy-skeletal, mixed, mesic Xerollic Paleorthids
Provo Bay	Fine-silty, mesic Typic Calciaquolls
Reebok	Loamy-skeletal, mixed, mesic, shallow Aridic Petrocalcic Palexerolls
Renol	Loamy-skeletal, mixed, mesic Aridic Petrocalcic Palexerolls
Reywat	Loamy-skeletal, mixed, mesic Lithic Argixerolls
Rofiss	Loamy-skeletal, carbonatic, mesic Xeric Torriorthents
Roshe Springs	Fine-loamy, mesic Typic Calciaquolls
Saltair	Fine-silty, mixed, mesic Typic Salorthids
Sandall	Loamy-skeletal, carbonatic, mesic Xerollic Calciorthids
Sanpete	Loamy-skeletal, carbonatic, mesic Xerollic Calciorthids
Saxby	Loamy-skeletal, mixed, mesic Lithic Xerollic Calciorthids
Shabliss	Loamy, mixed, mesic, shallow Haploxerollic Durorthids

TABLE 19.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Sheep Creek	Loamy-skeletal, mixed, frigid Calcic Argixerolls
Spager	Loamy-skeletal, carbonatic, mesic, shallow Xerollic Paleorthids
Starley	Loamy-skeletal, mixed Lithic Cryoborolls
Sumine	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Taylorsville	Fine-silty, mixed, mesic Calcixerollic Xerochrepts
Thiokol	Fine-silty, mixed, mesic Xerollic Calciorthids
Truesdale	Coarse-loamy, mixed, mesic Haploxerollic Durorthids
Wales	Fine-loamy, mixed (calcareous), mesic Xeric Torrifluvents
Wallsburg	Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls
Woodrow	Fine-silty, mixed (calcareous), mesic Xeric Torrifluvents
Yeates Hollow	Clayey-skeletal, montmorillonitic, frigid Typic Argixerolls

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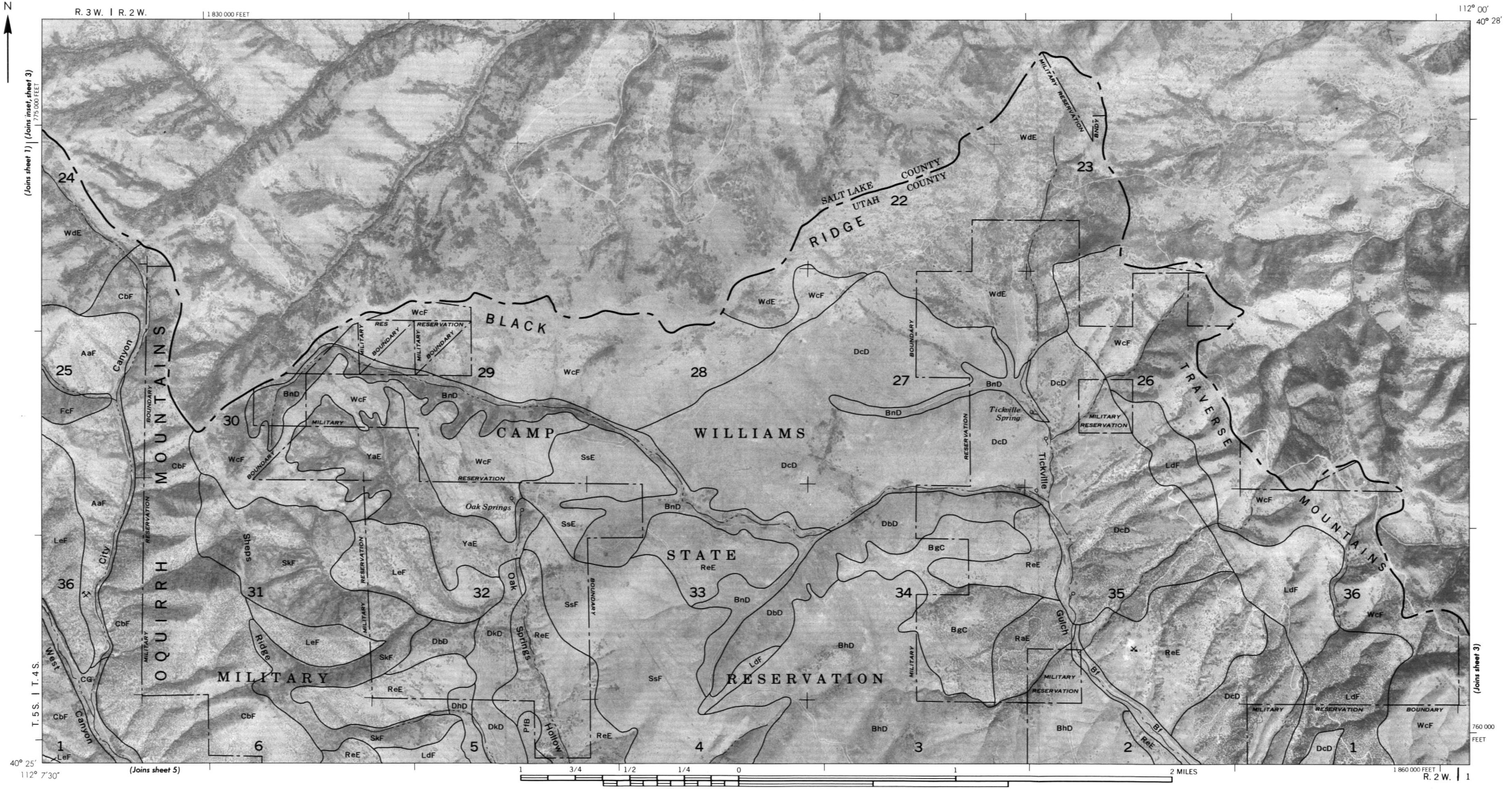
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FAIRFIELD-NEPHI AREA, UTAH NO. 1

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 2



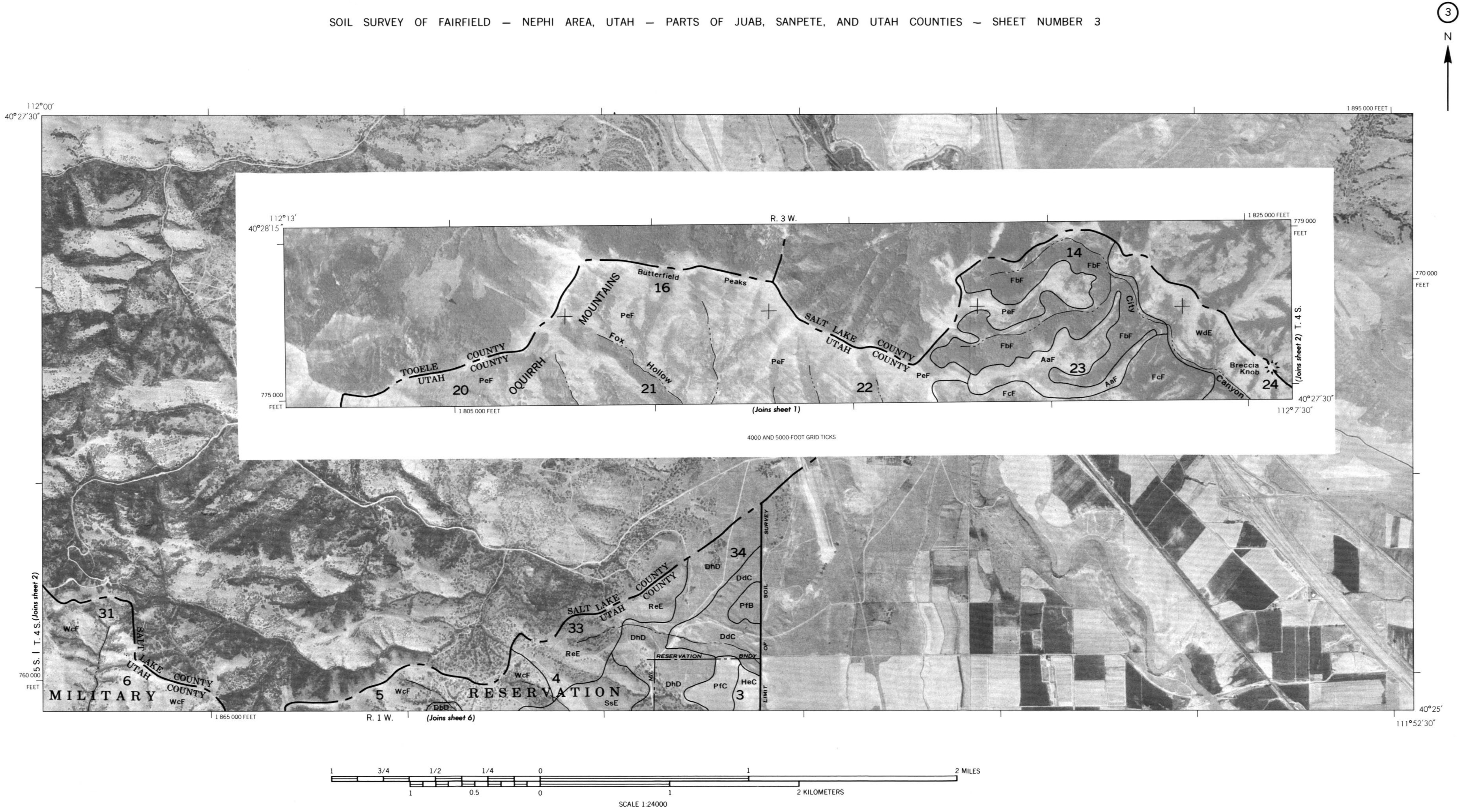
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FAIRFIELD–NEPHI AREA, UTAH NO. 2

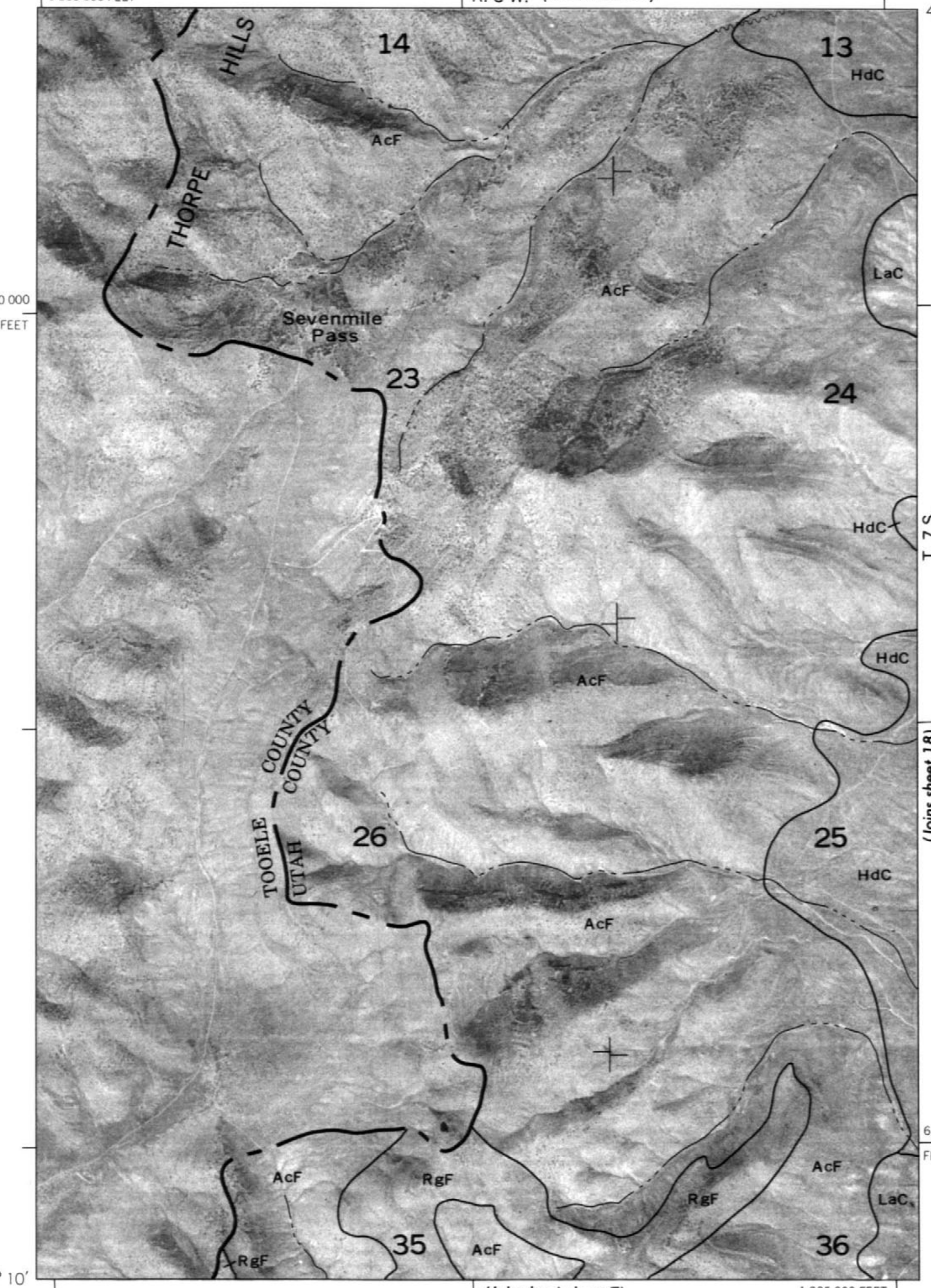


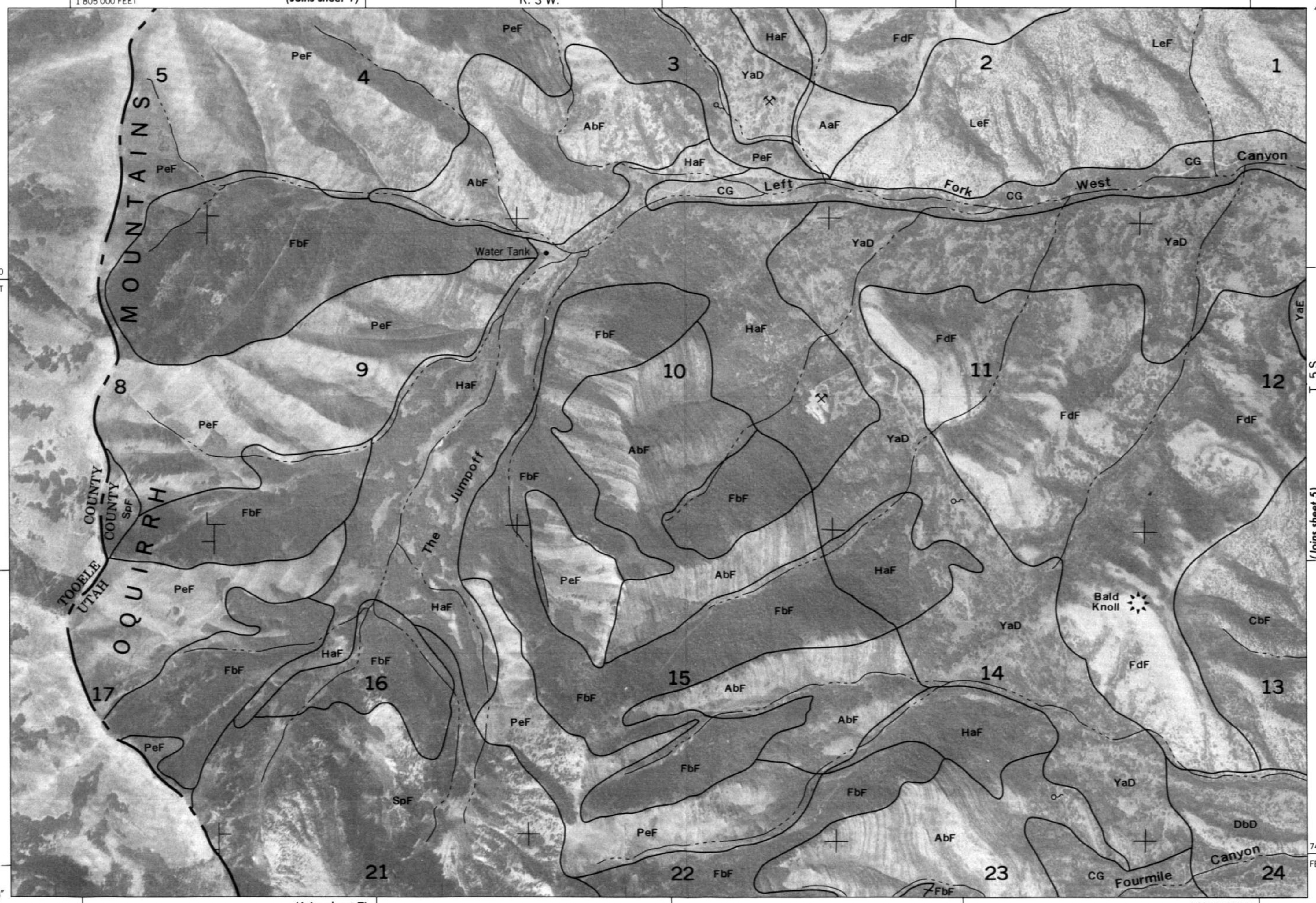
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SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 4





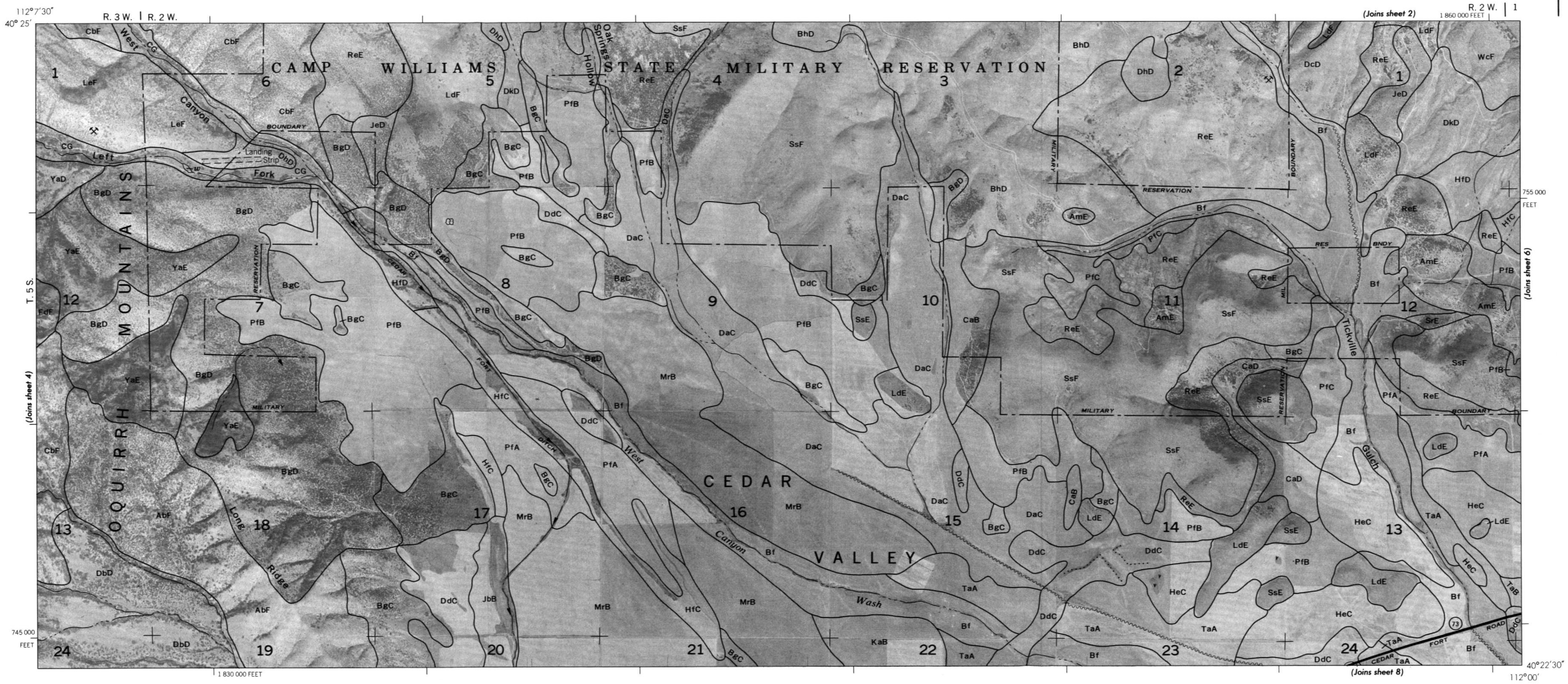
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FAIRFIELD–NEPHI AREA, UTAH NO. 4



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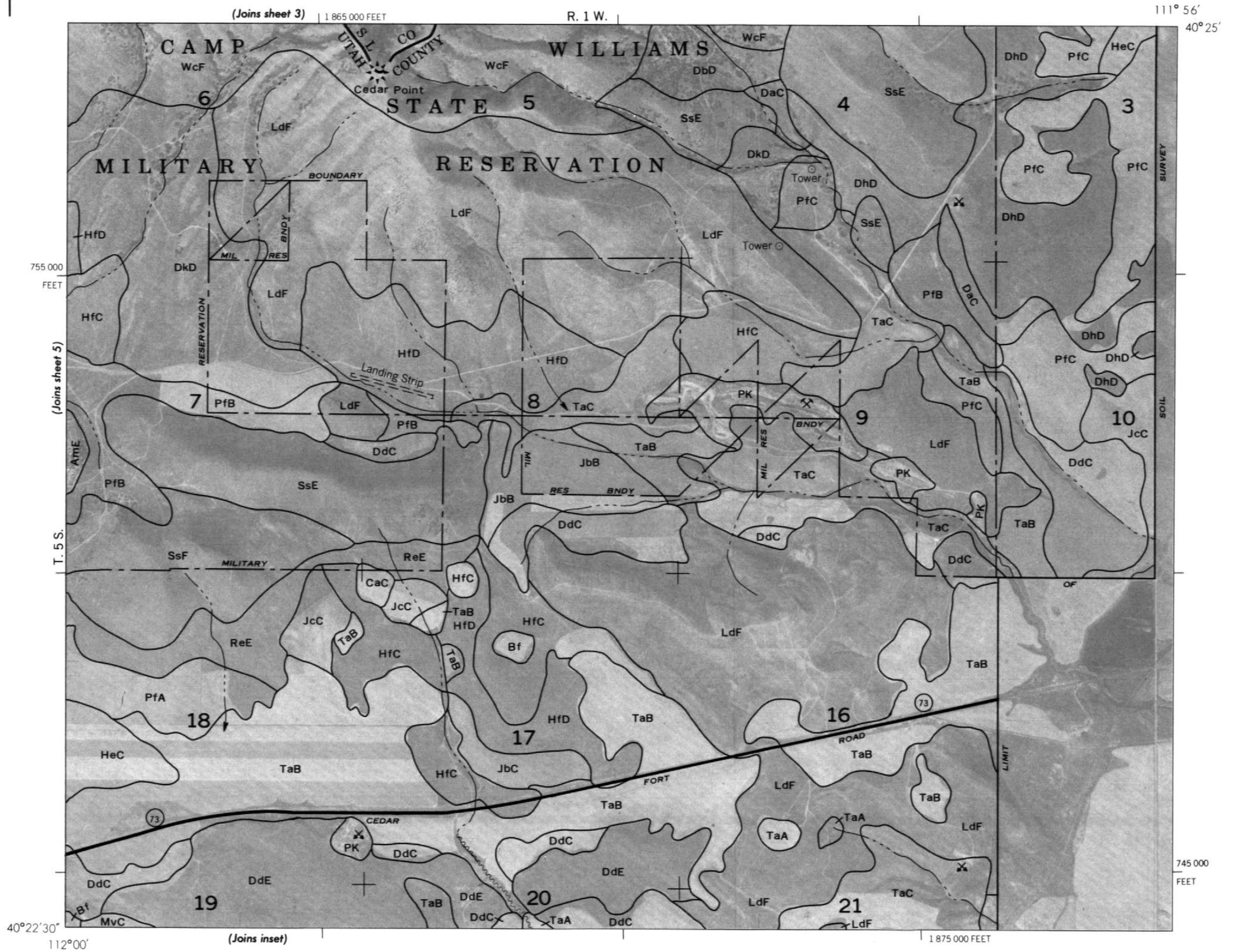
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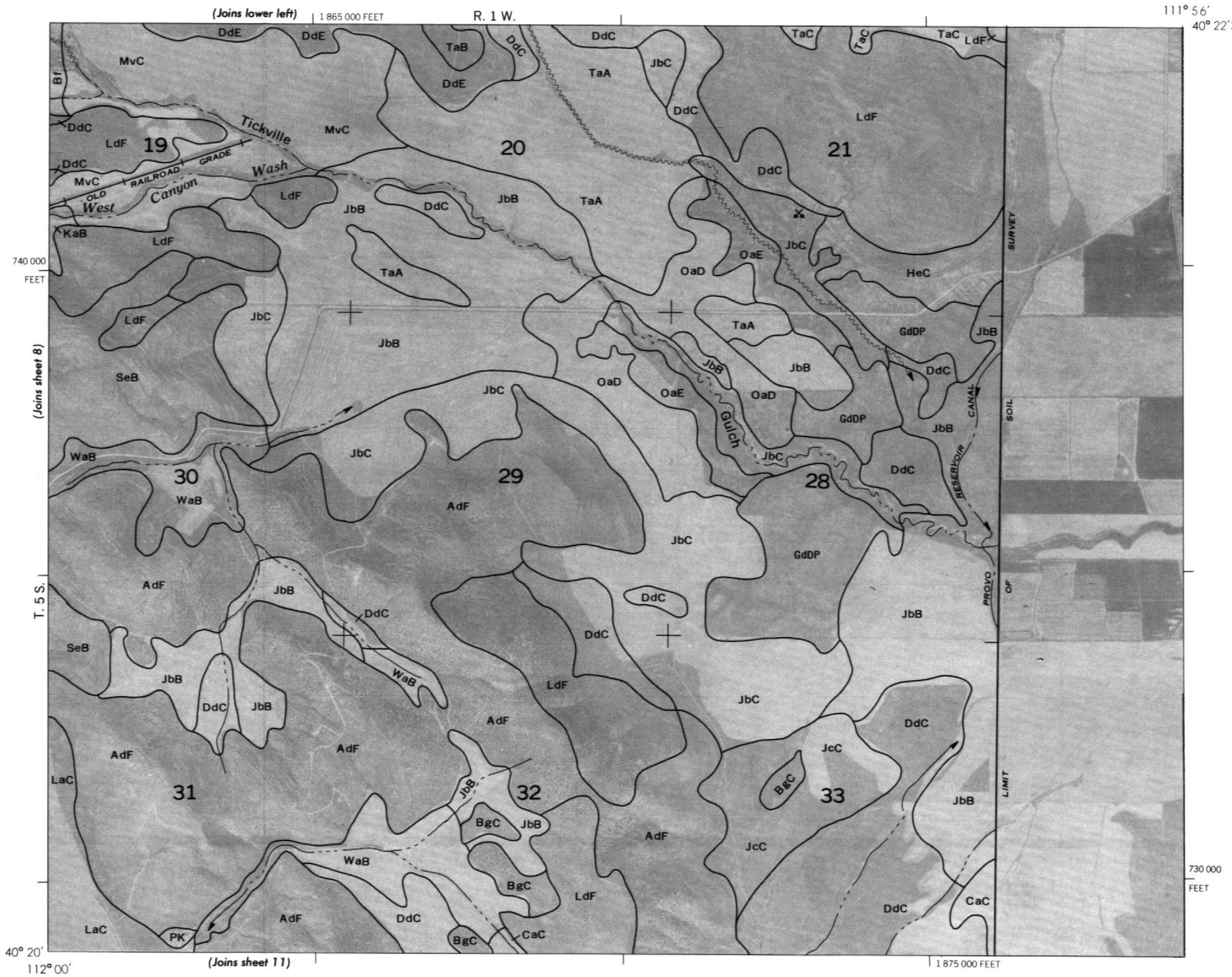
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SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 6





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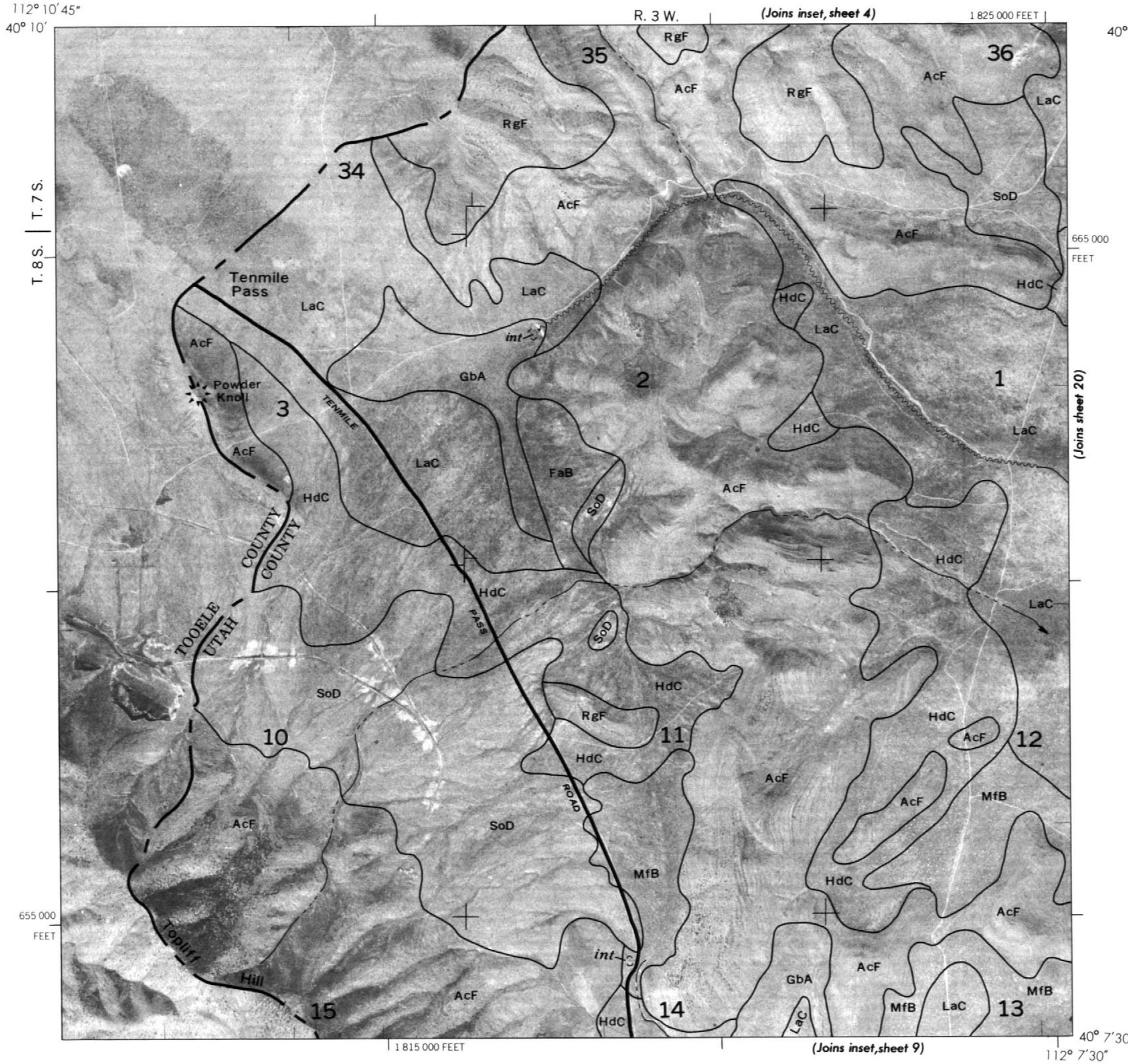
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FAIRFIELD-NEPHI AREA, UTAH NO. 7

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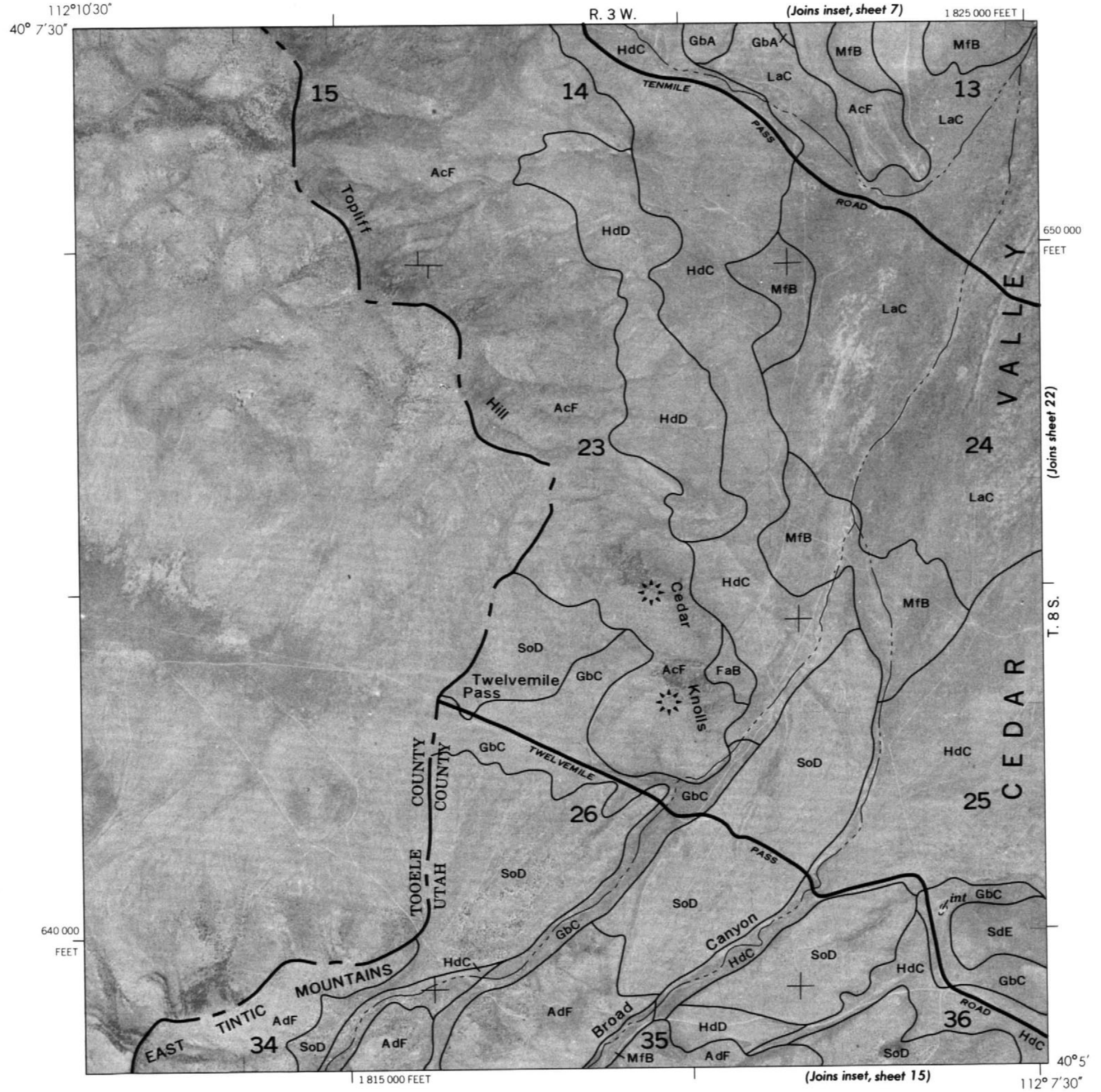
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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD-NEPHI AREA, UTAH NO. 9

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
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1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 10



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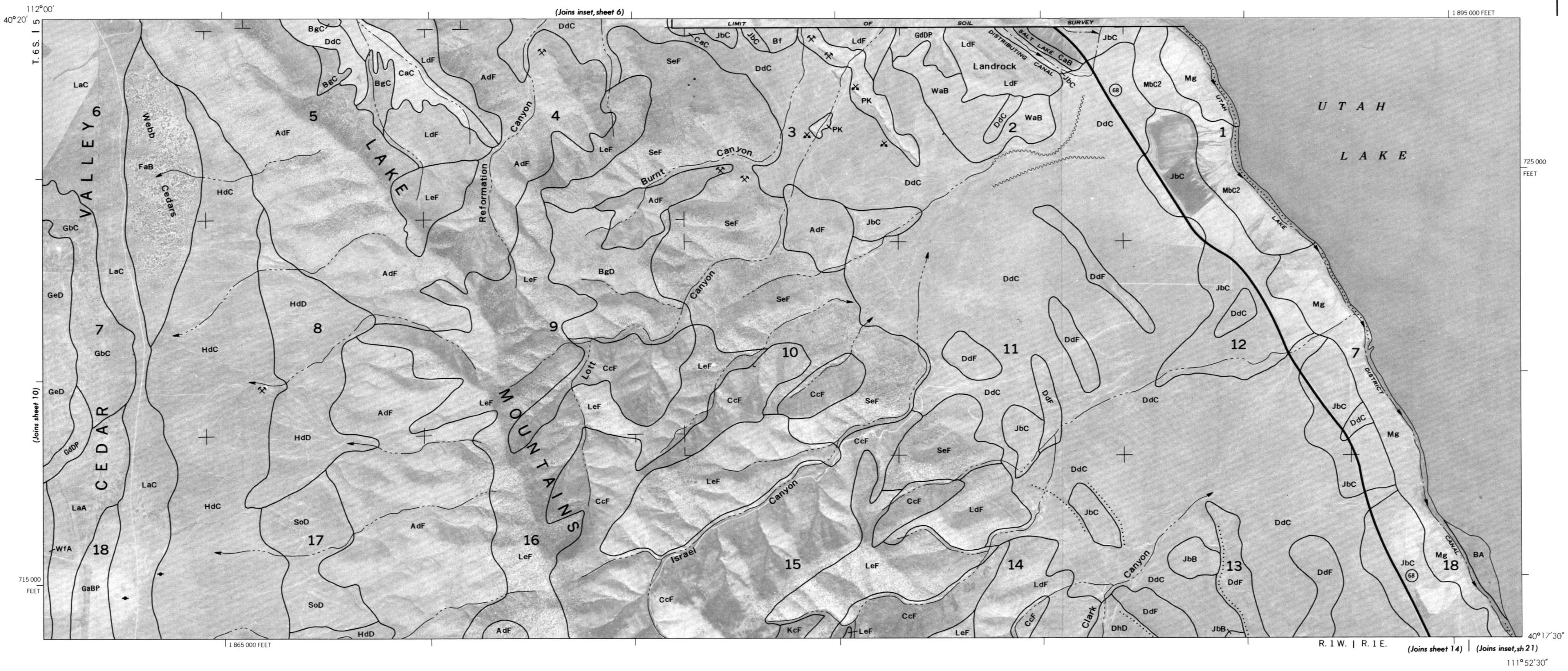
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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 11

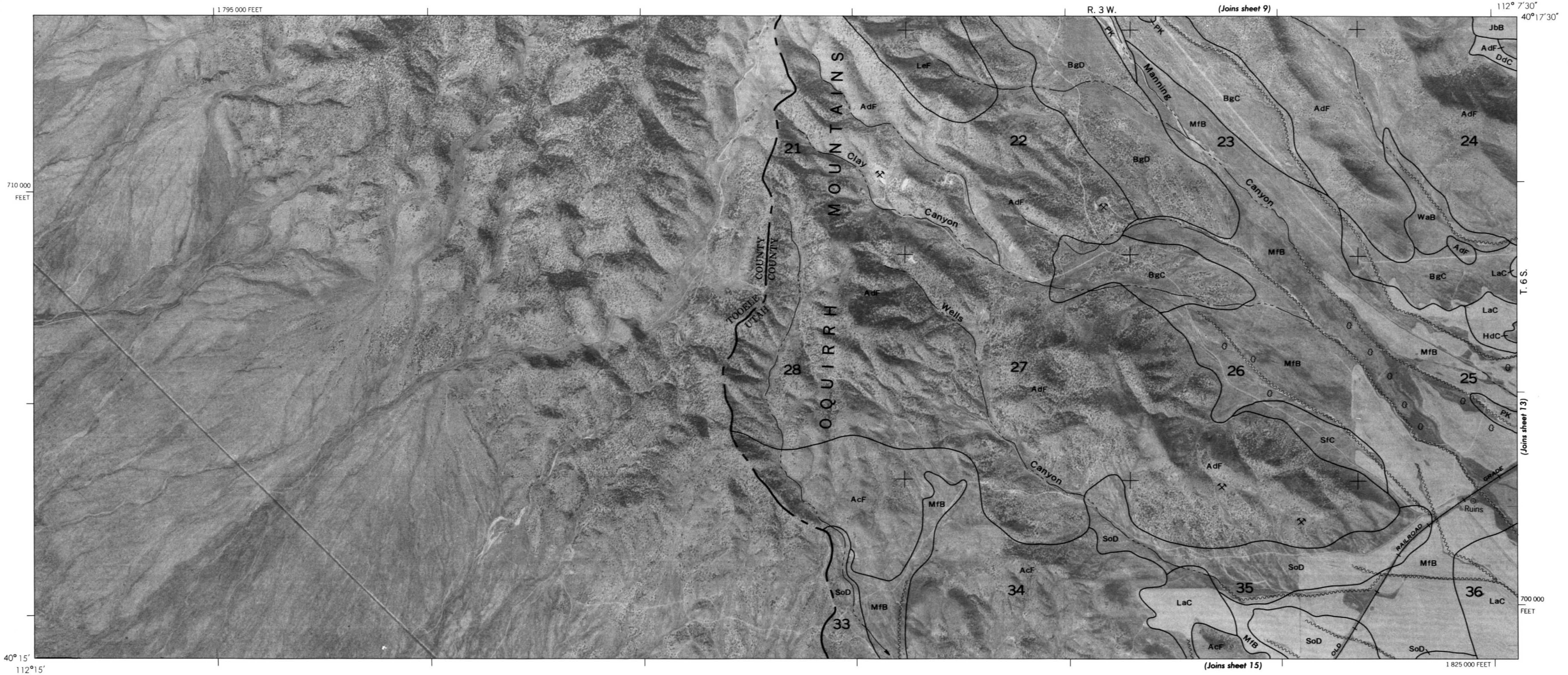
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1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000

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SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 12



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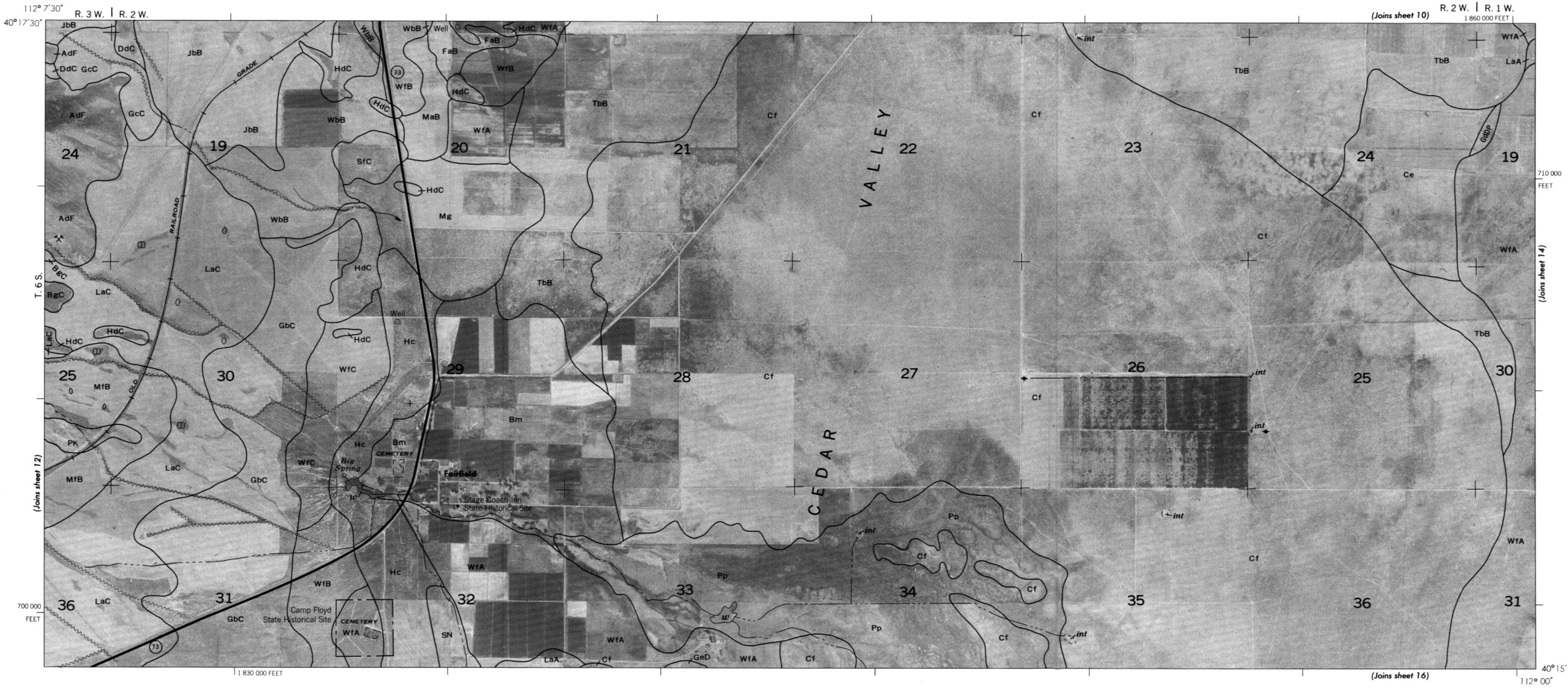
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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FAIRFIELD–NEPHI AREA, UTAH NO. 13

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
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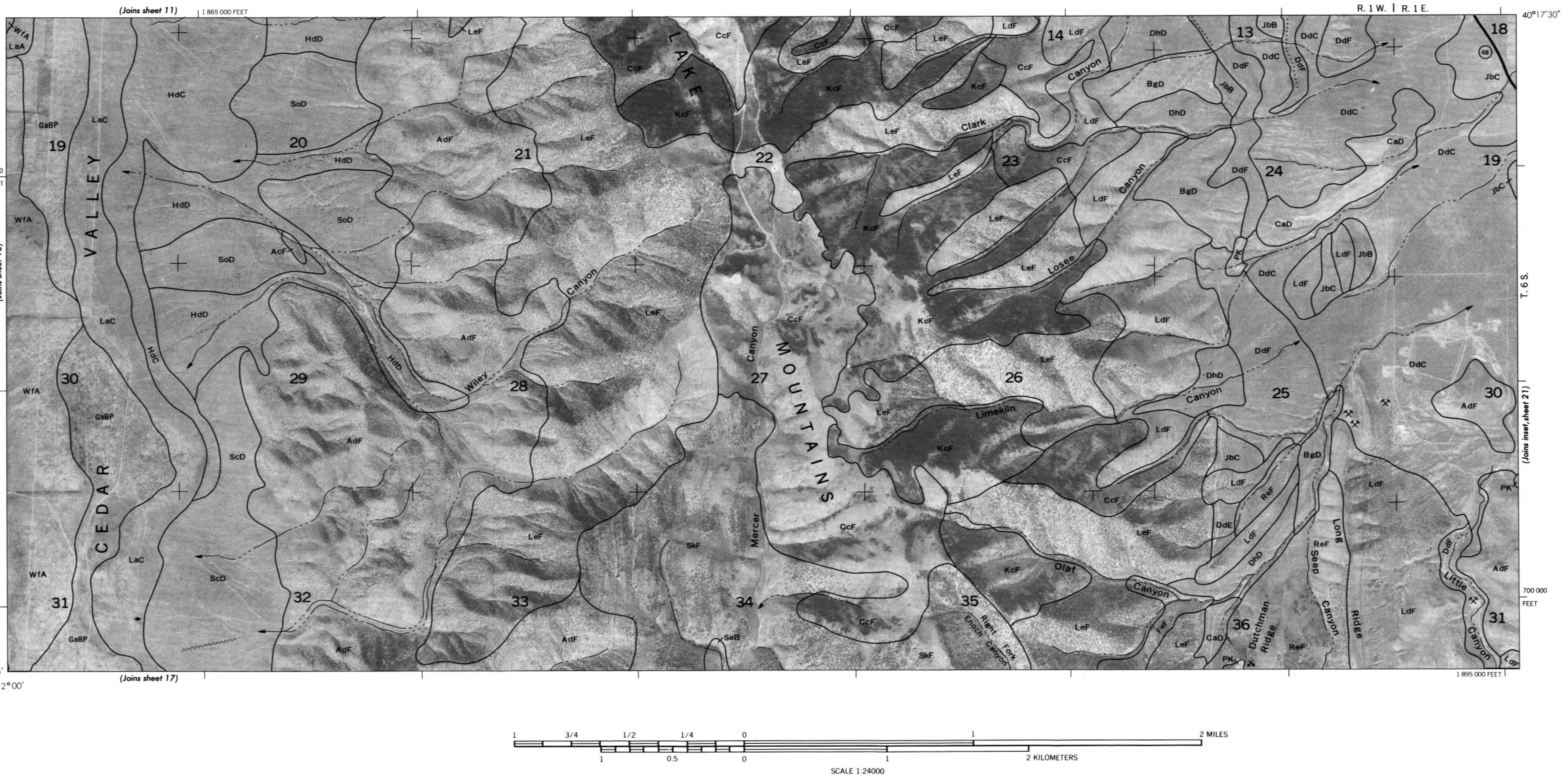
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SCALE 1:24000

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SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 14

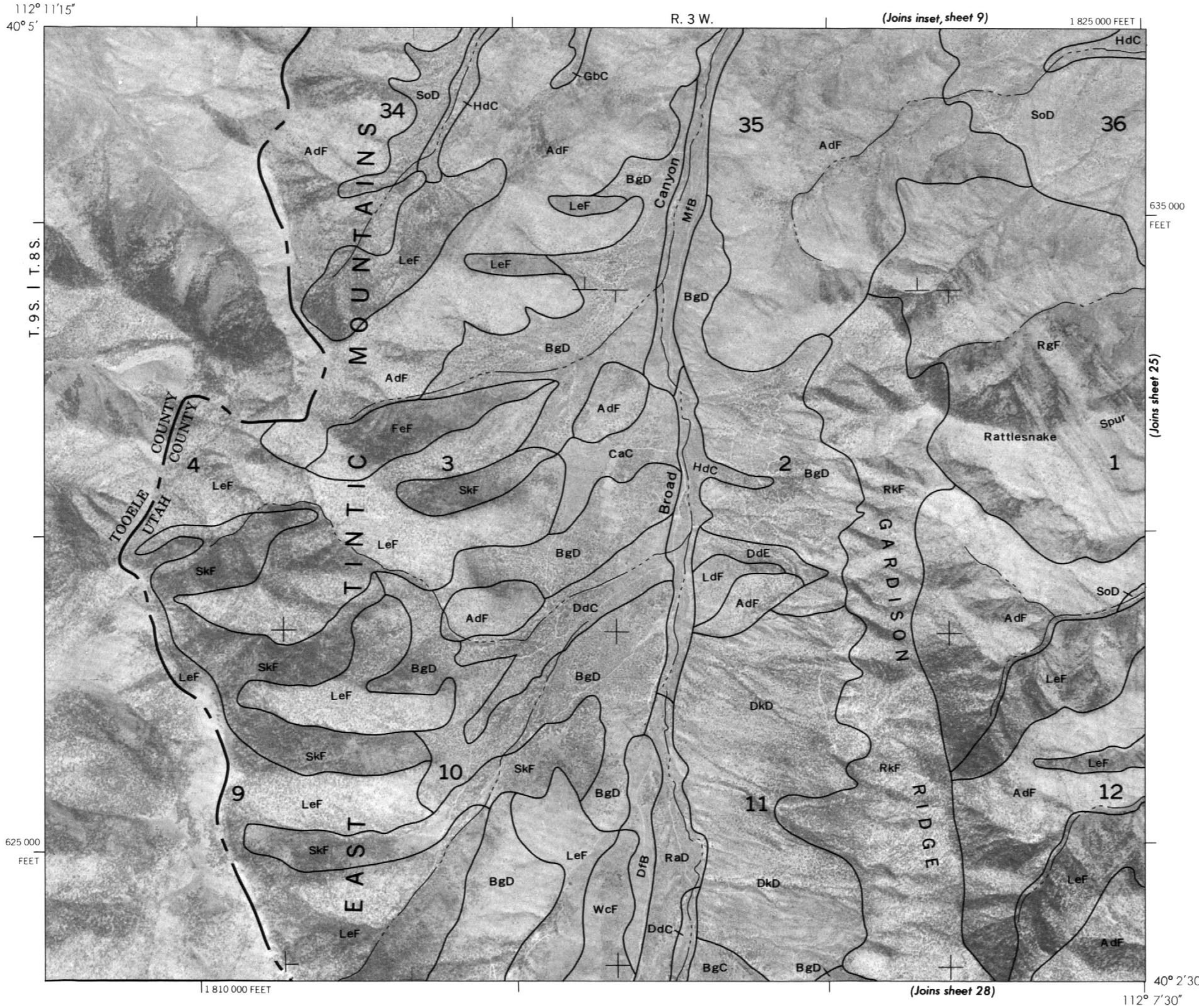


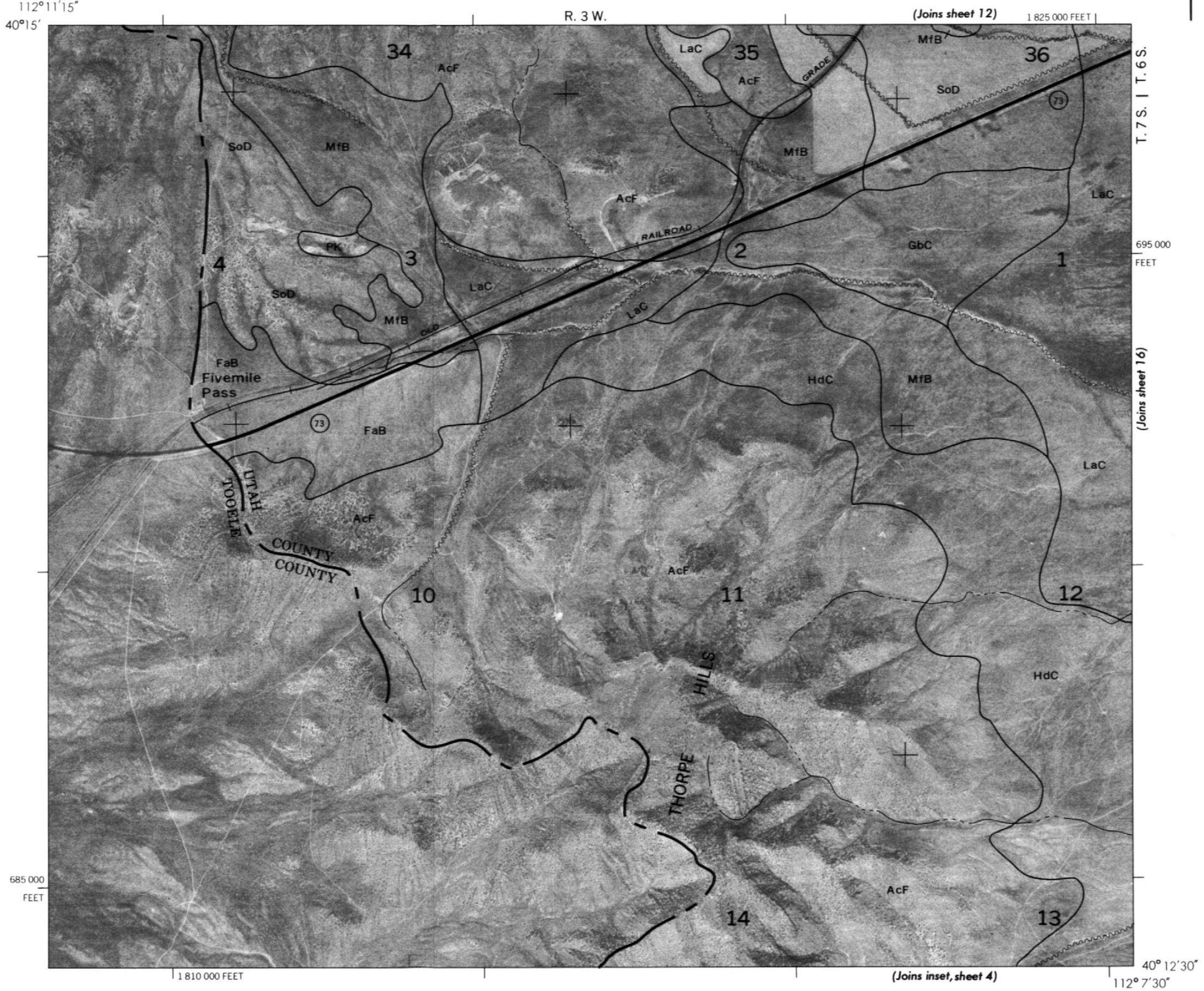
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 14

FAIRFIELD-NEPHI AREA, UTAH NO. 15

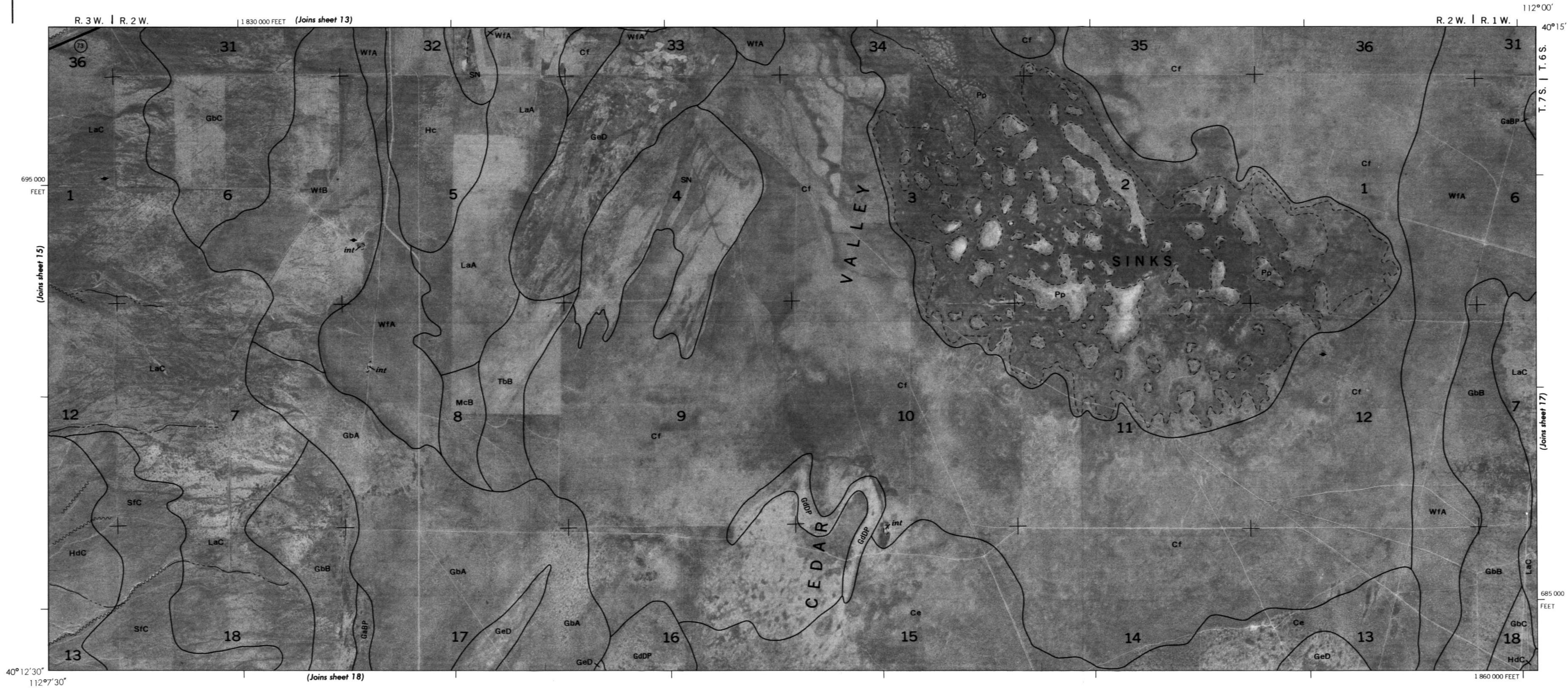
Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.





SCALE 1:24000 — 2 MILES — 2 KILOMETERS

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 16



1 3/4 1/2 1/4 0 1 2 MILES

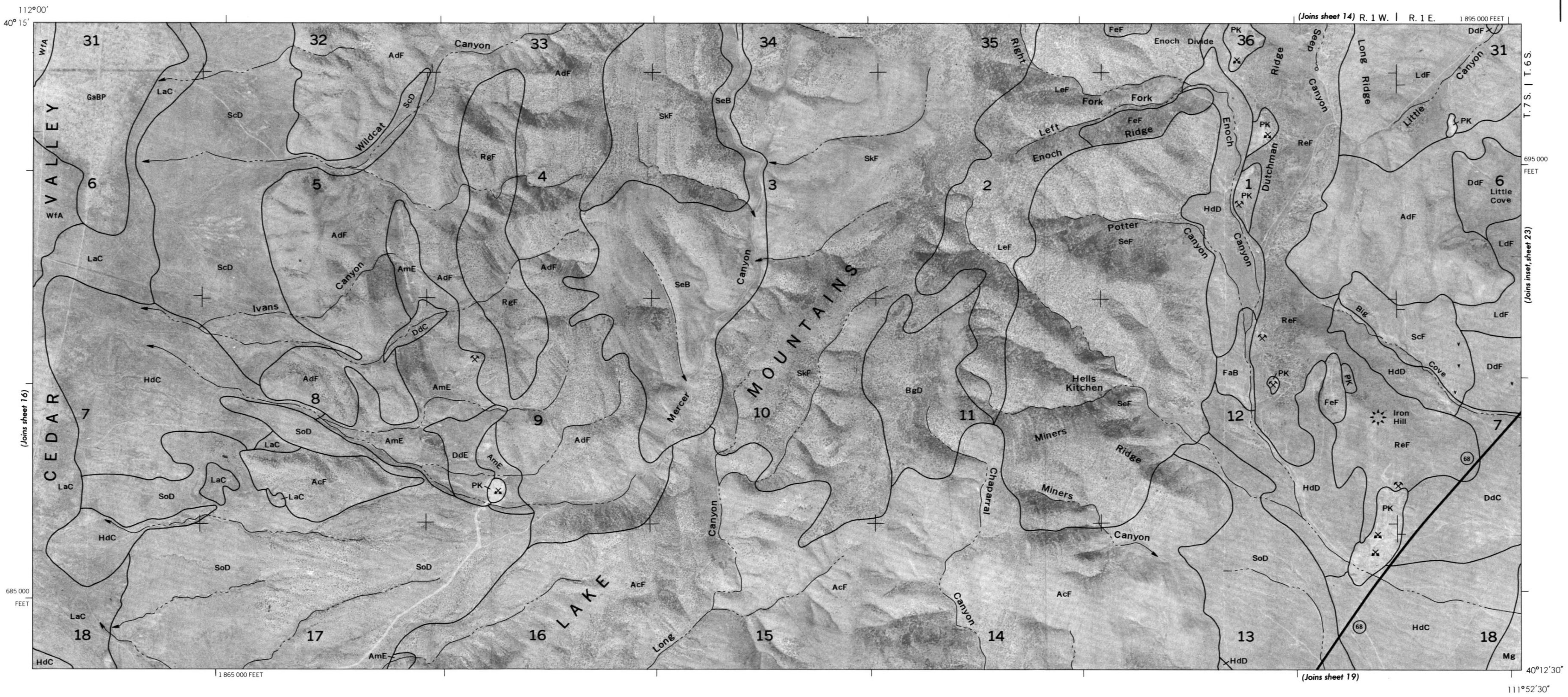
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 18

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

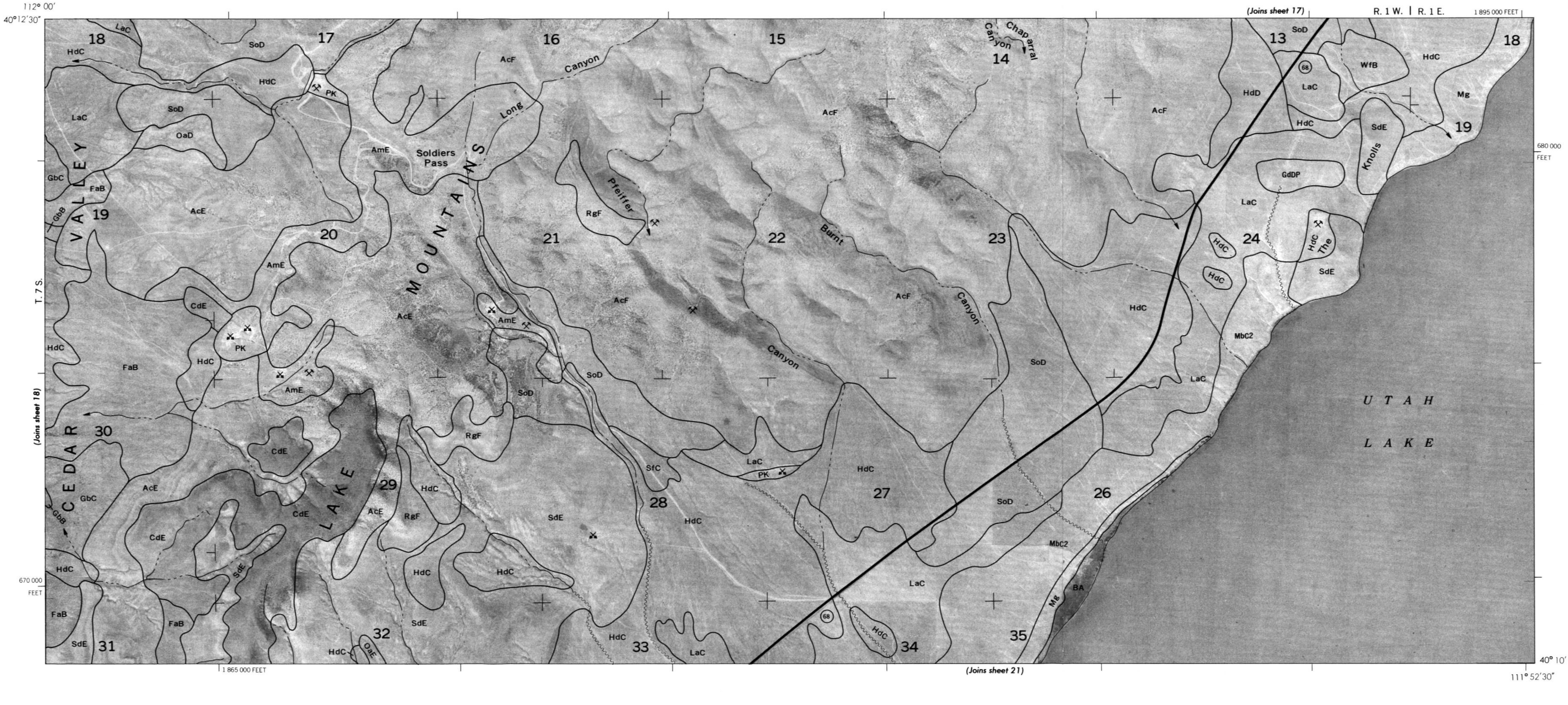
SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

FAIRFIELD-NEPHI AREA, UTAH NO. 19

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 20



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

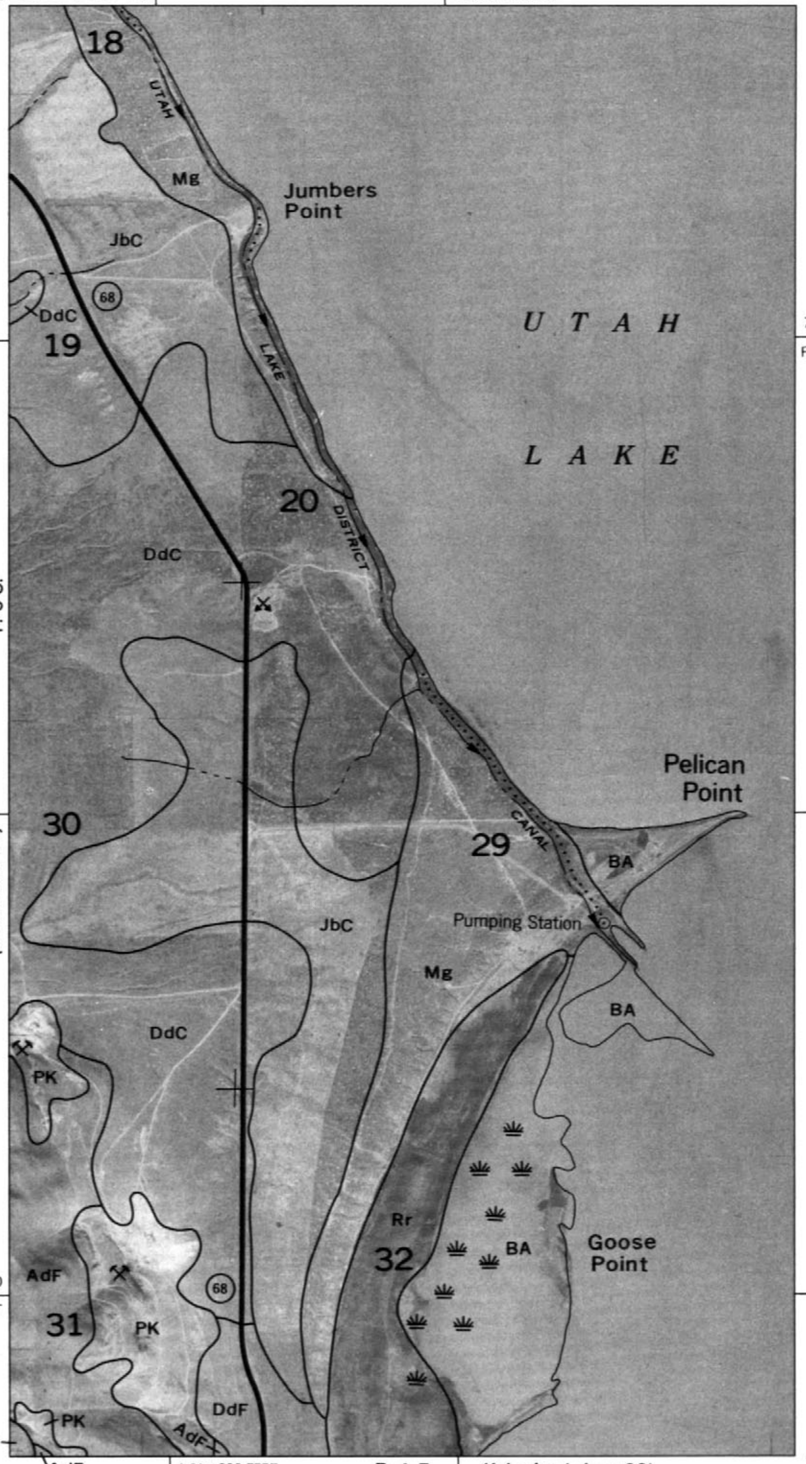
Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

112°00′
40°10′
(Joins sheet 19)
1 880 000 FEET
665 000 FEET
T. 7 S.
T. 8 S.
(Joins sheet 20)
655 000 FEET



R. 2 W. | R. 1 W.
1 865 000 FEET
(Joins sheet 23)
40° 7′30″
111° 54′45″

111°52′30″
40°17′30″
(Joins sheet 11)
1 900 000 FEET
710 000 FEET
T. 6 S.
(Joins sheet 14)
700 000 FEET



LdF
AdF
1 897 000 FEET
R. 1 E.
(Joins inset, sheet 23)
40°15′
111°50′45″

3000 AND 5000-FOOT GRID TICKS

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 22

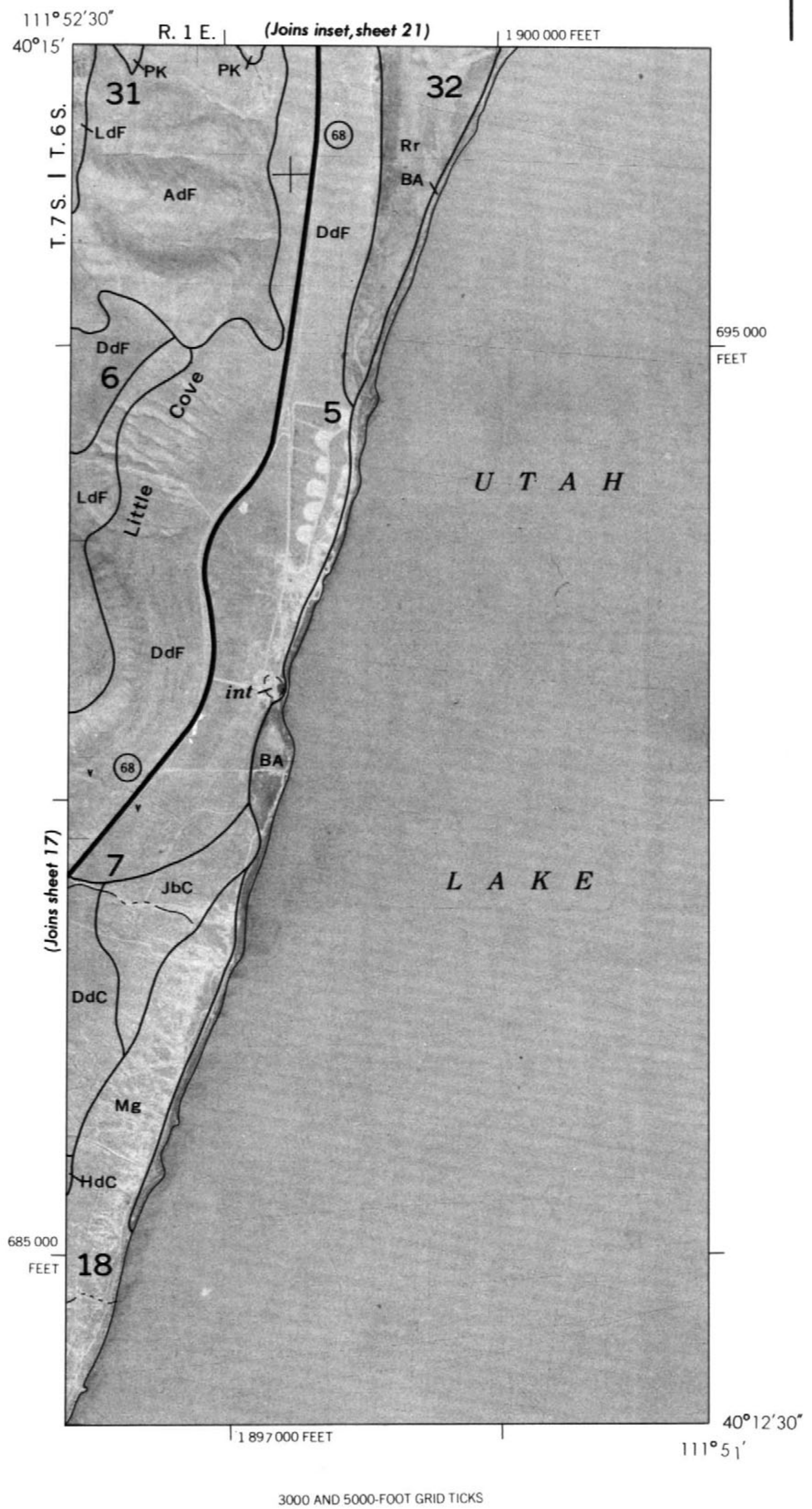


1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N





3000 AND 5000-FOOT GRID TICKS

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 23

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

N

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 24



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



SCALE 1:24000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

FAIRFIELD–NEPHI AREA, UTAH NO. 25

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

(26)

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 26



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 26

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

27

N

FAIRFIELD–NEPHI AREA, UTAH NO. 27

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 28



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD-NEPHI AREA UTAH NO. 28

N

112°7′30″ R. 3 W. | R. 2 W. 1 855 000 FEET (Joins sheet 25)

40°2′30″



T. 9 S.

(Joins sheet 28)

(Joins sheet 30)

620 000 FEET

610 000 FEET

1 825 000 FEET

(Joins sheet 33)

40° 00′
112° 00′

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 29

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

30

N

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 30



1 — 3/4 — 1/2 — 1/4 — 0 — 1 — 2 MILES

1 — 0.5 — 0 — 1 — 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 30



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 31

Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 32

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 — 3/4 — 1/2 — 1/4 — 0 — 1 — 2 MILES

1 — 0.5 — 0 — 1 — 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 33

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 34

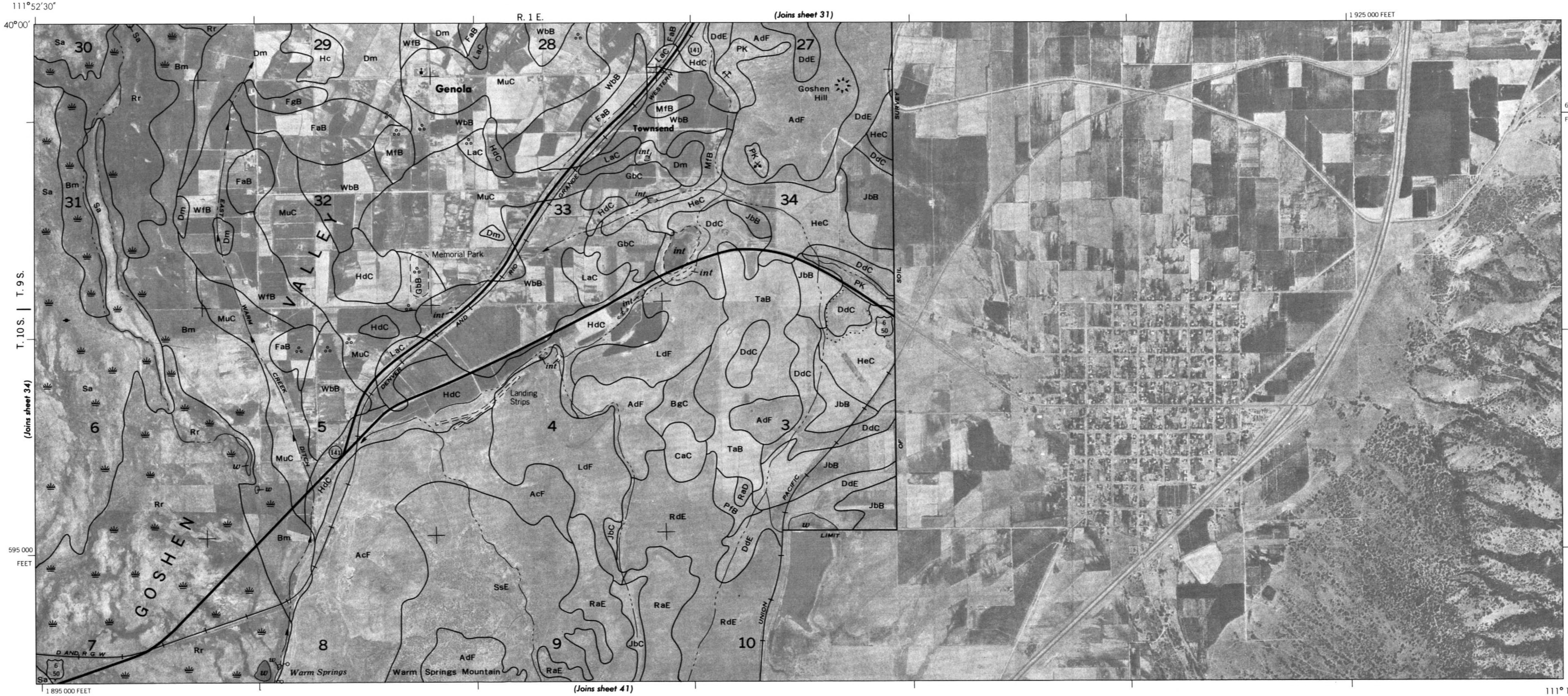


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

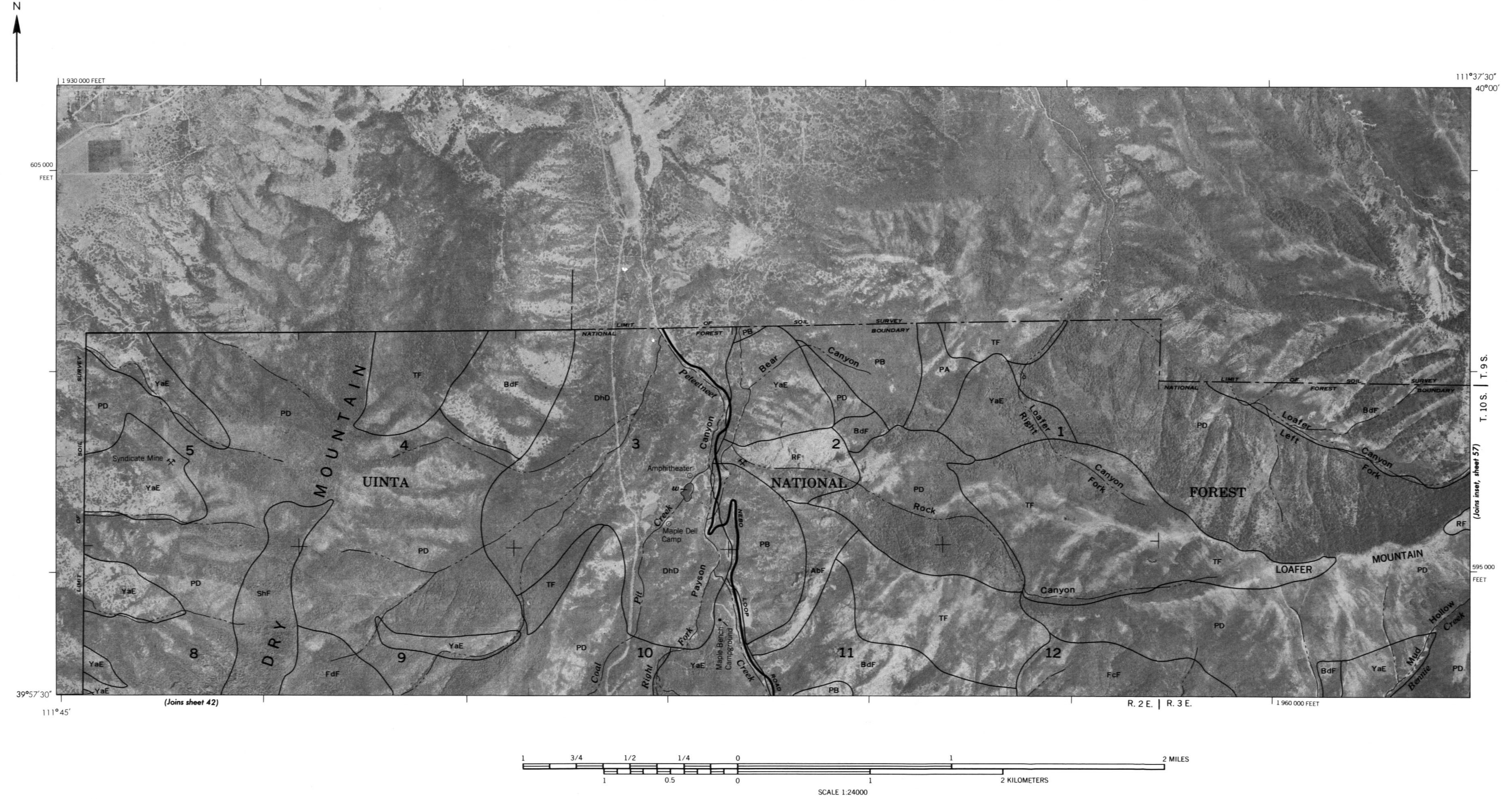
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 35

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 36

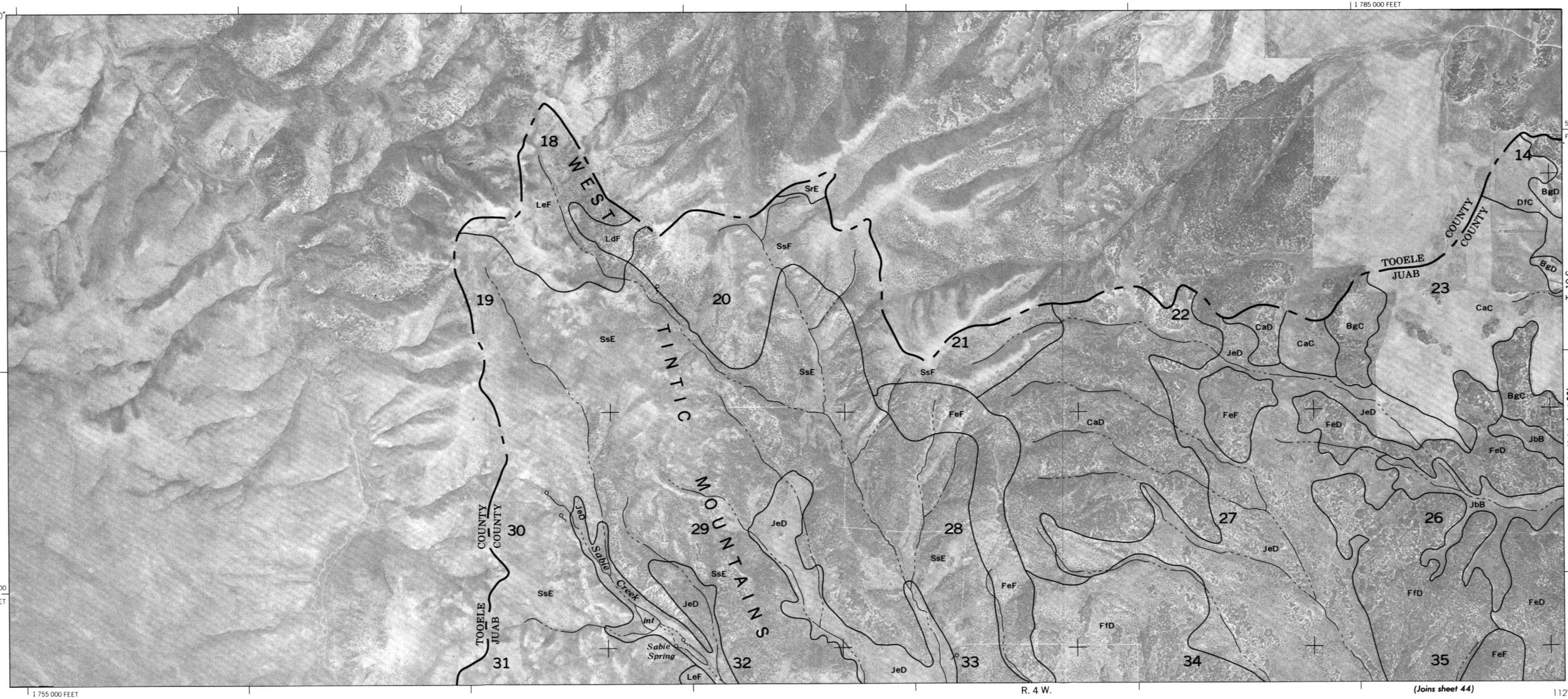


This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.

Coordinate grid ticks and land division corners, if shown, are approximately positioned.

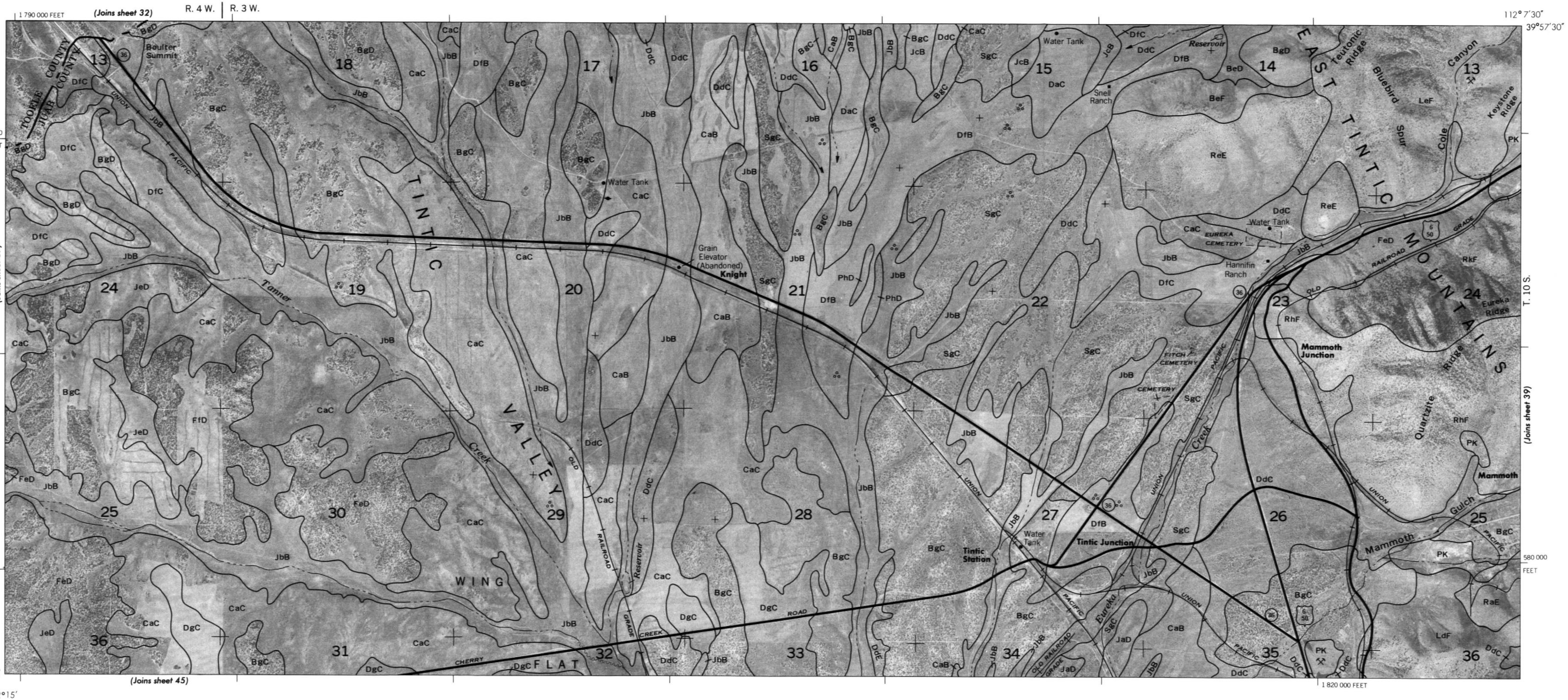
FAIRFIELD–NEPHI AREA, UTAH NO. 36



FAIRFIELD–NEPHI AREA, UTAH NO. 37

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD-NEPHI AREA, UTAH NO. 39

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

N

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 40



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



1 3/4 1/2 1/4 0 1 2 MILES

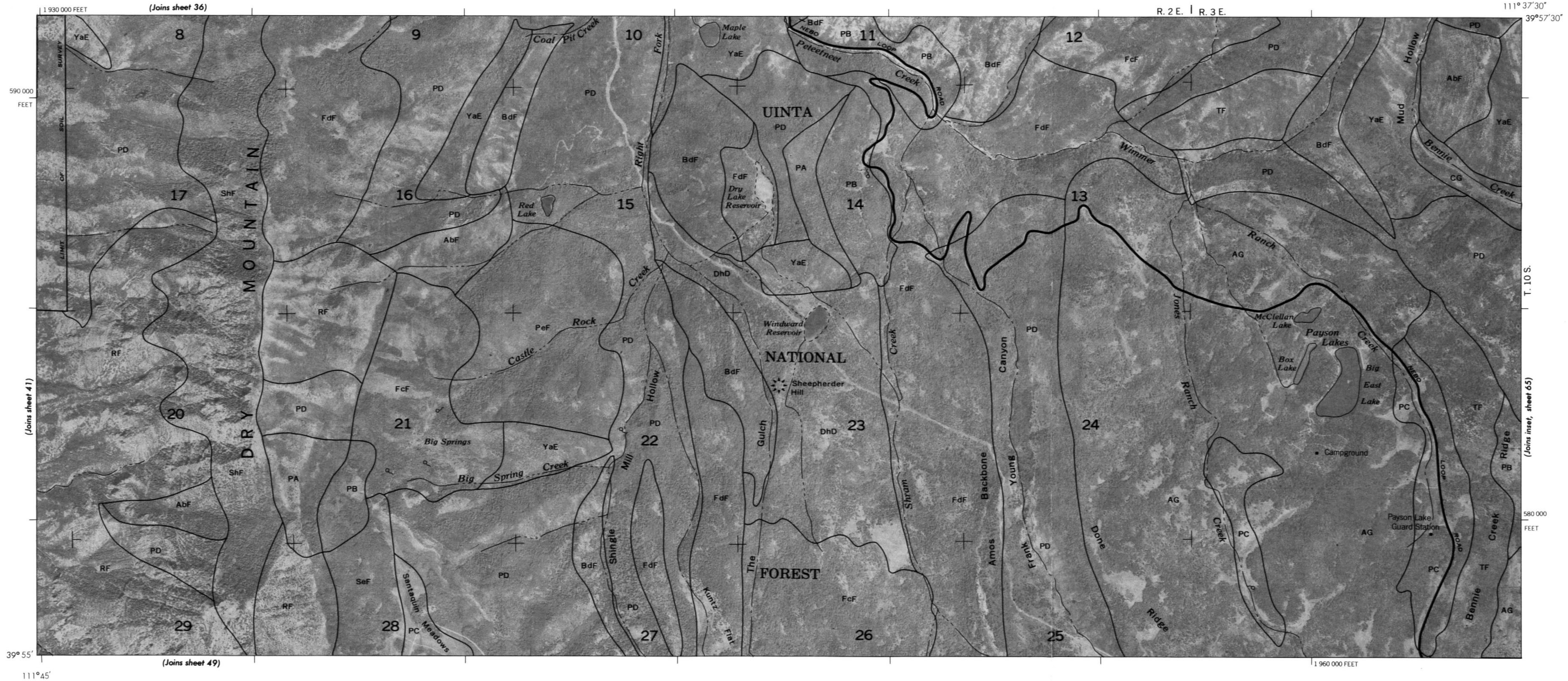
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 41

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 42

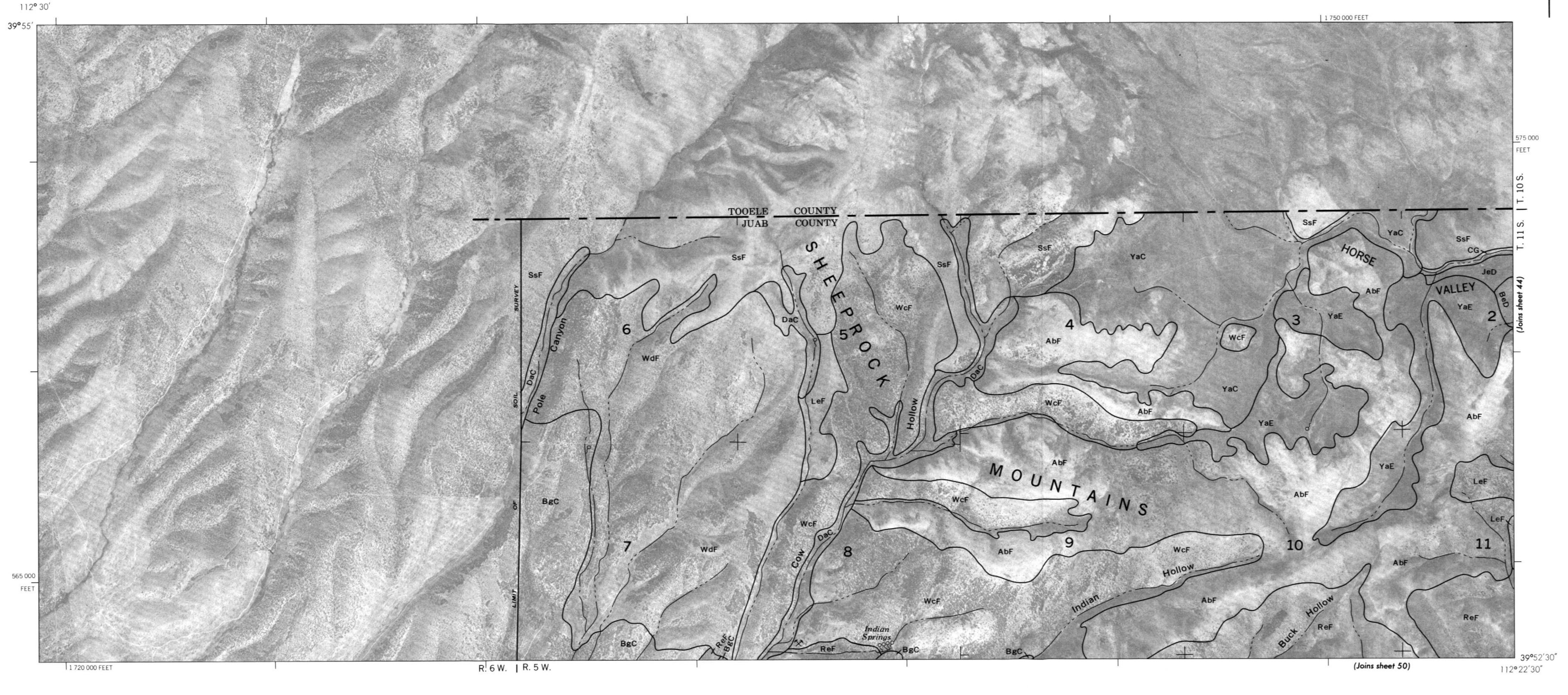


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 43

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 44

(44)
N



1 — 3/4 — 1/2 — 1/4 — 0 — 1 — 2 MILES

1 — 0.5 — 0 — 1 — 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

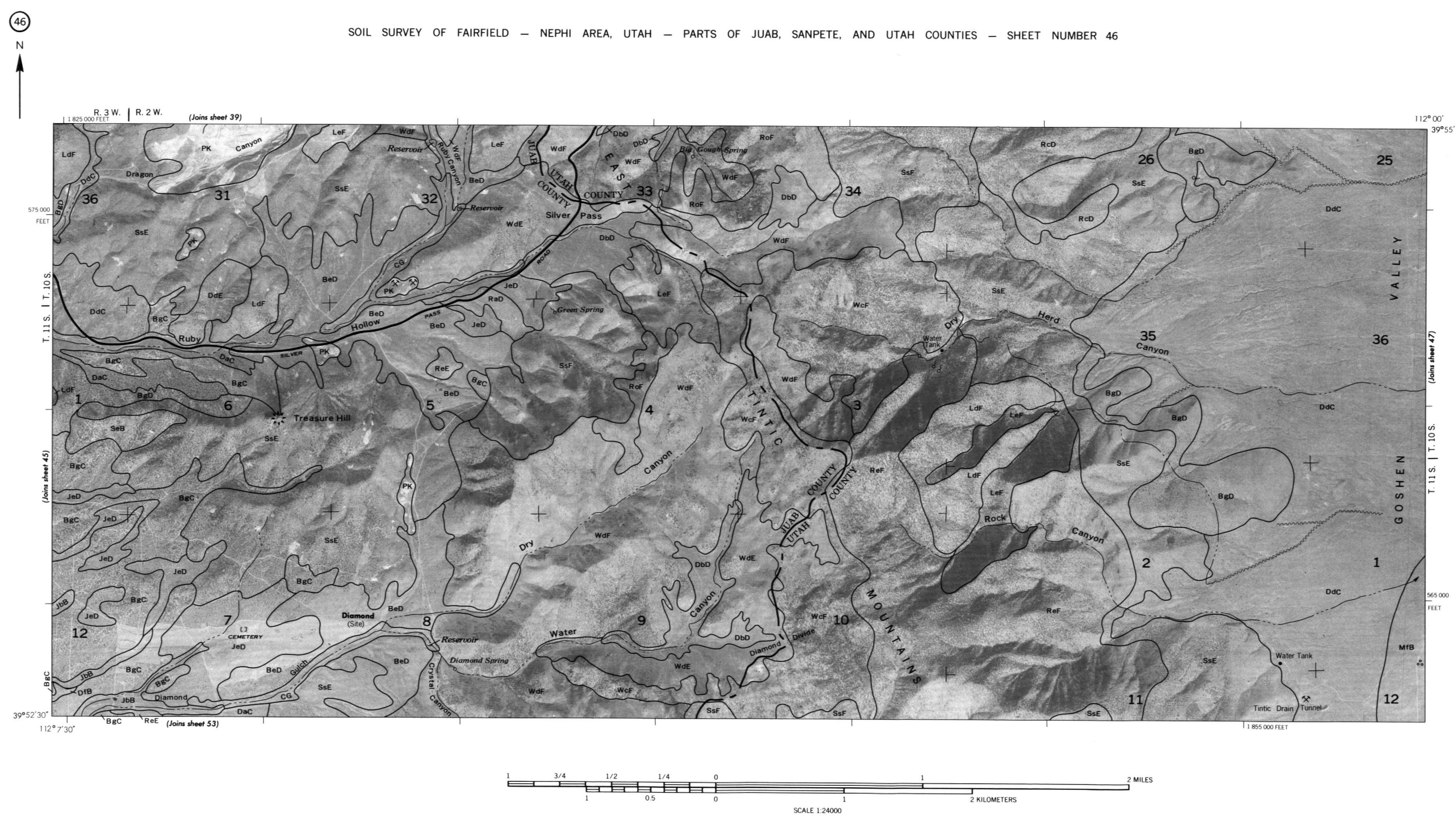


1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 45

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 46



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 47

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 48



SCALE 1:24000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 48



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 49

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 50



SCALE 1:24000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



FAIRFIELD–NEPHI AREA, UTAH NO. 51

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000



1 3/4 1/2 1/4 0 1 2 MILES

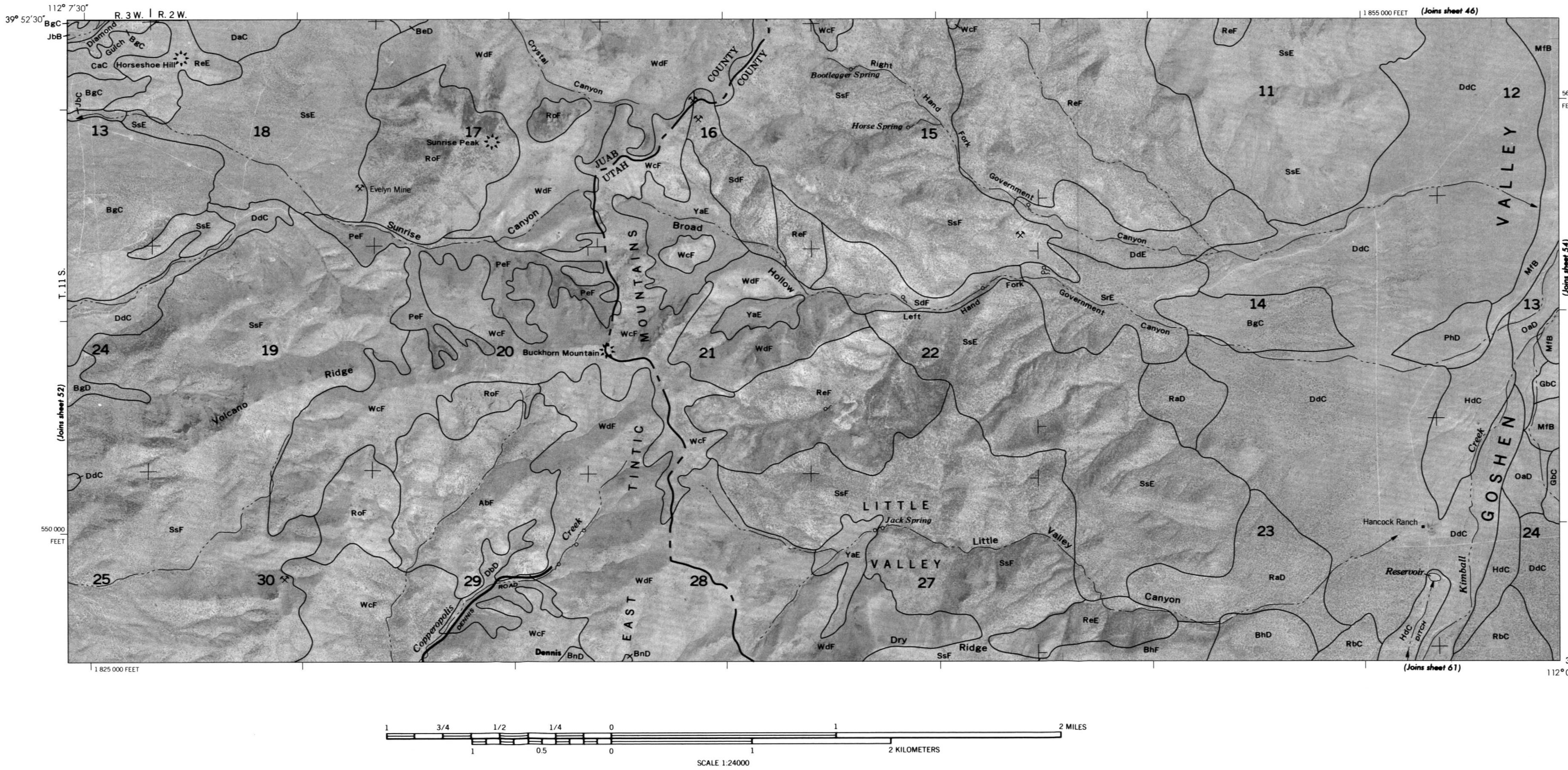
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 53

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



54

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 54



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

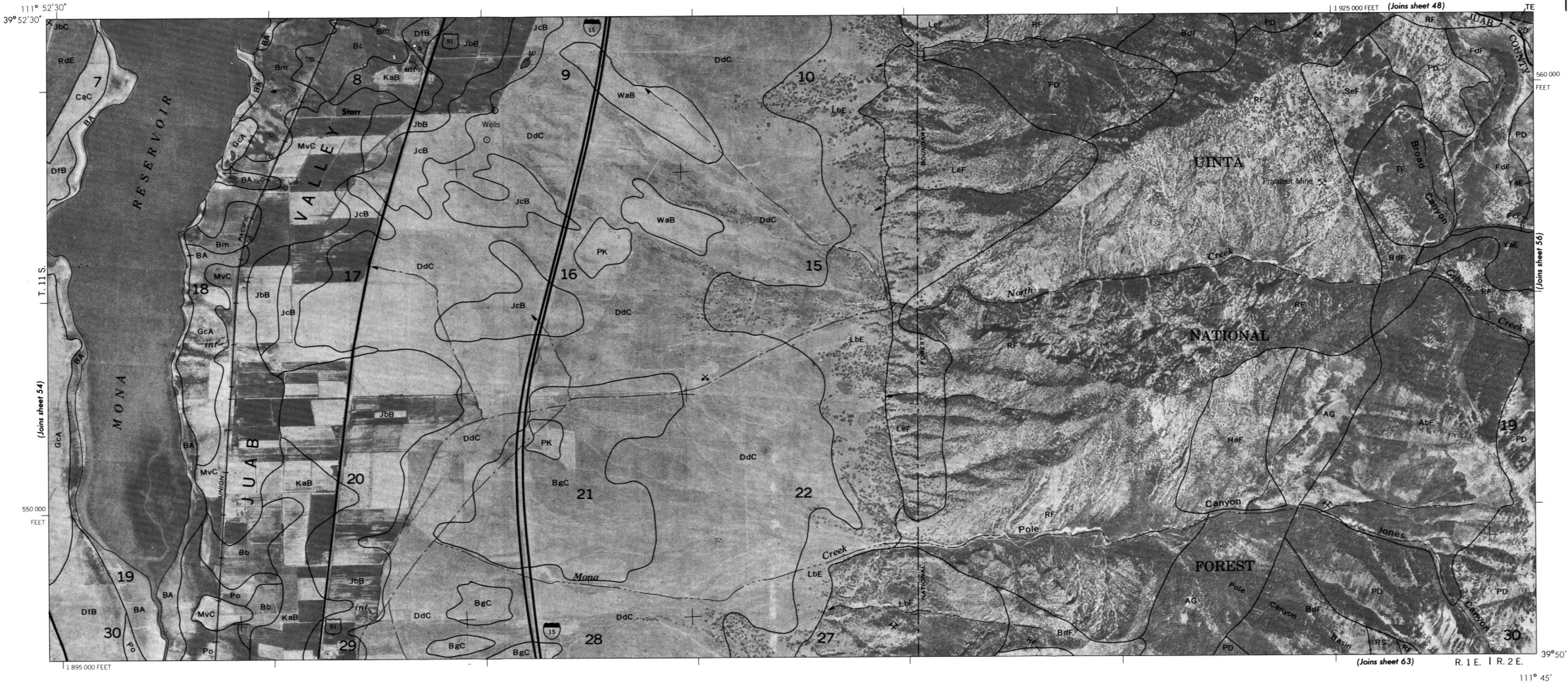
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD-NEPHI AREA, UTAH NO. 54

N

FAIRFIELD–NEPHI AREA, UTAH NO. 55

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



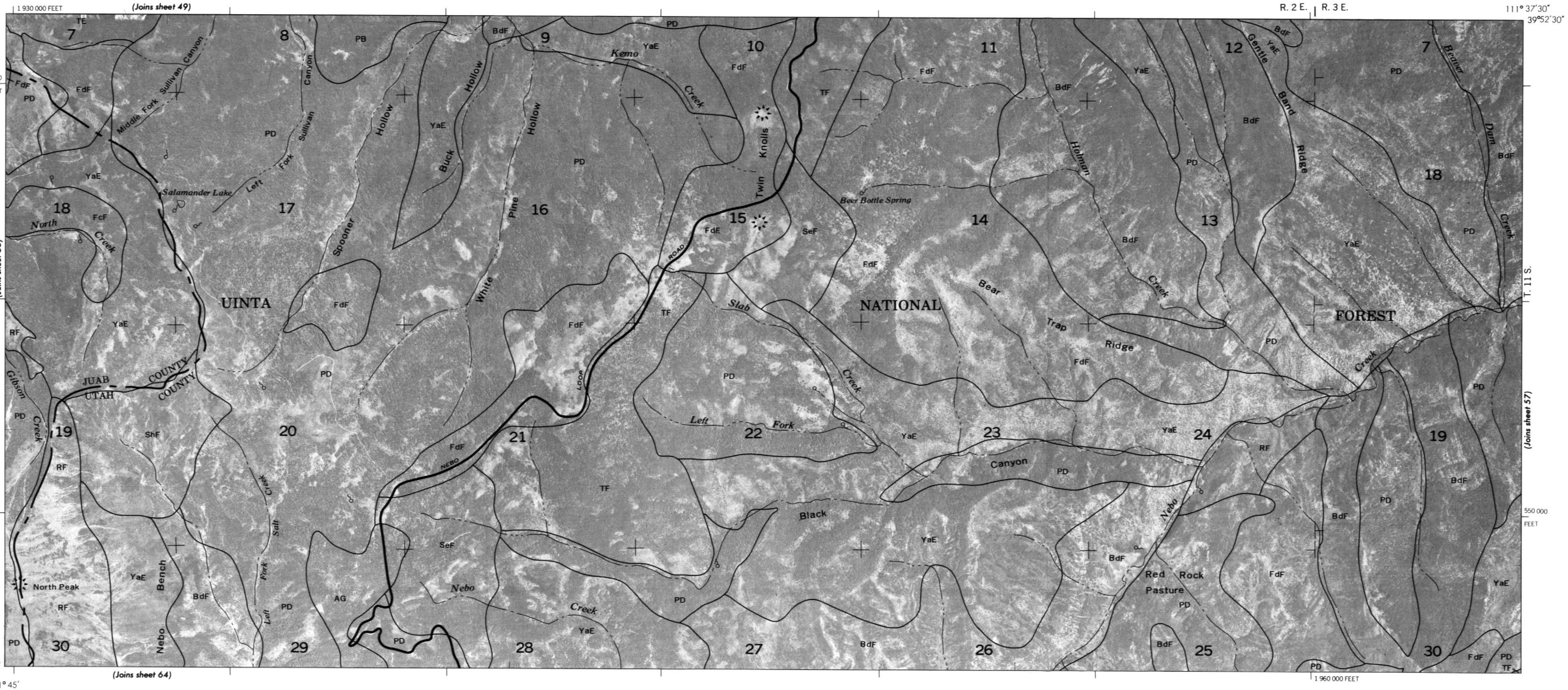
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

N

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 56

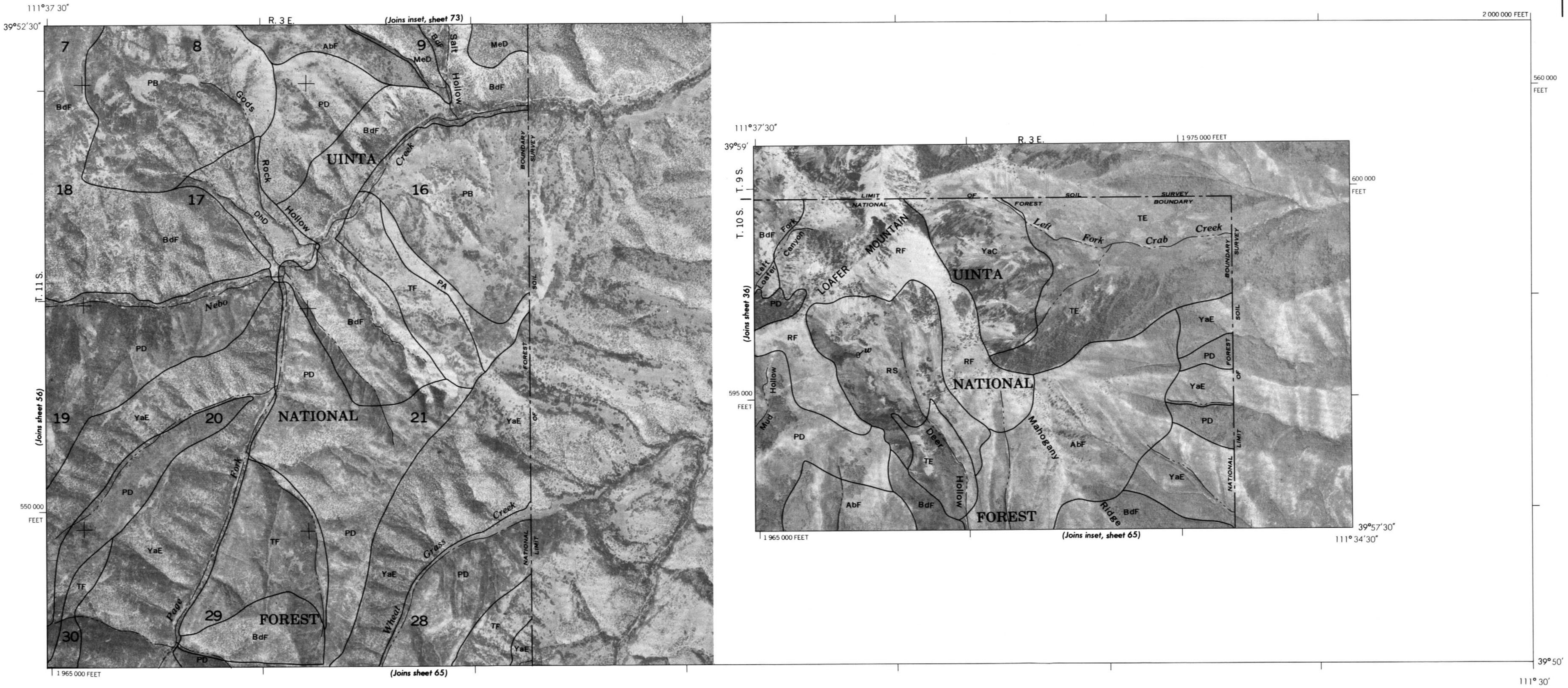


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

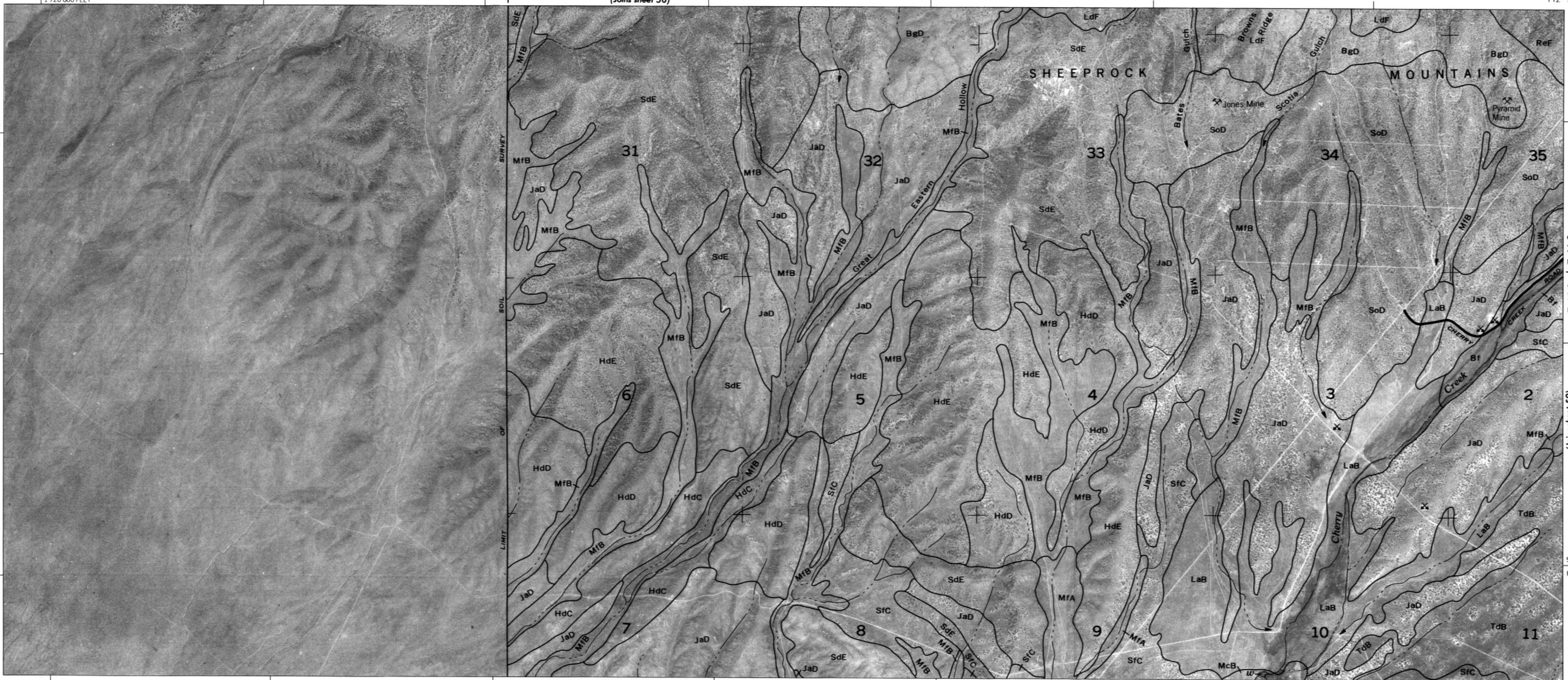
SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 57

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

N

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 58



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

FAIRFIELD–NEPHI AREA, UTAH NO. 59

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 60



1 3/4 1/2 1/4 0 1 2 MILES

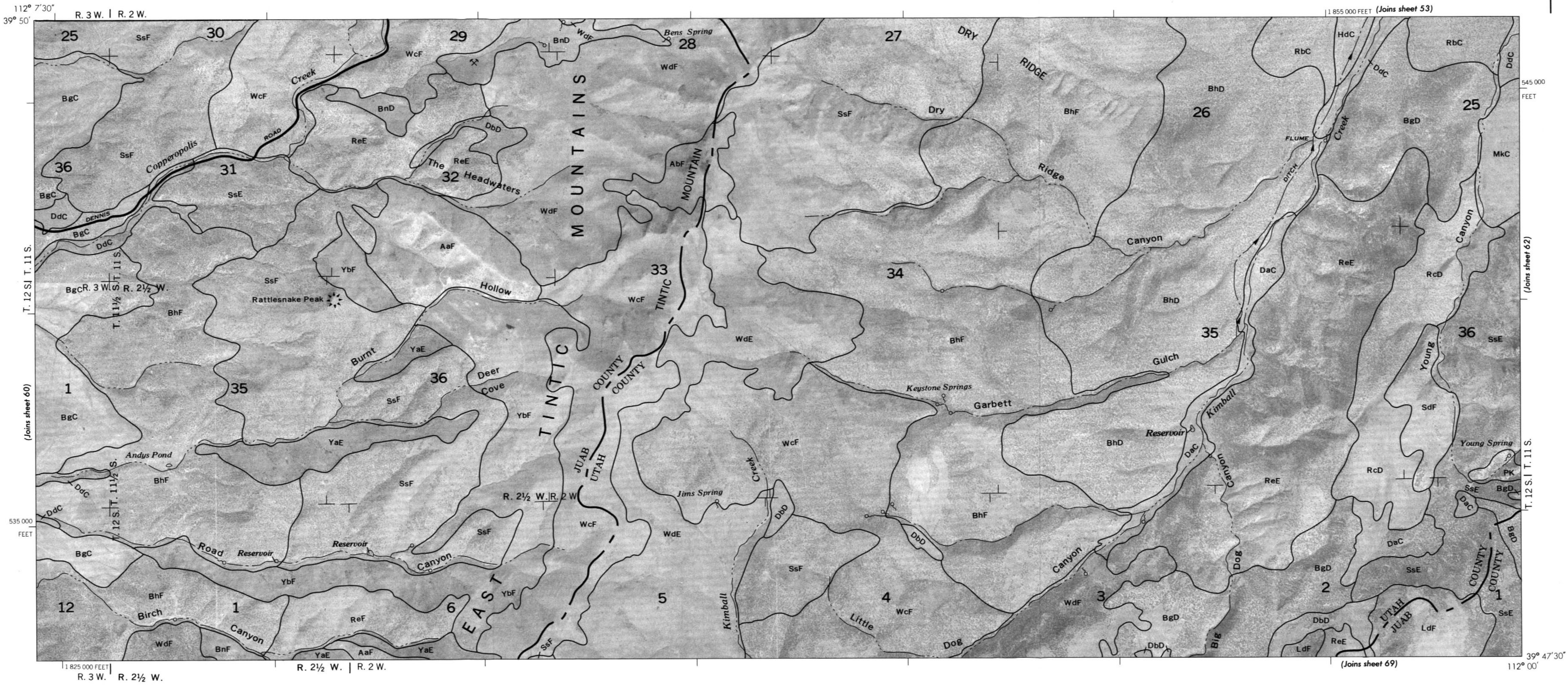
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 60

N



FAIRFIELD-NEPHI AREA, UTAH NO. 61

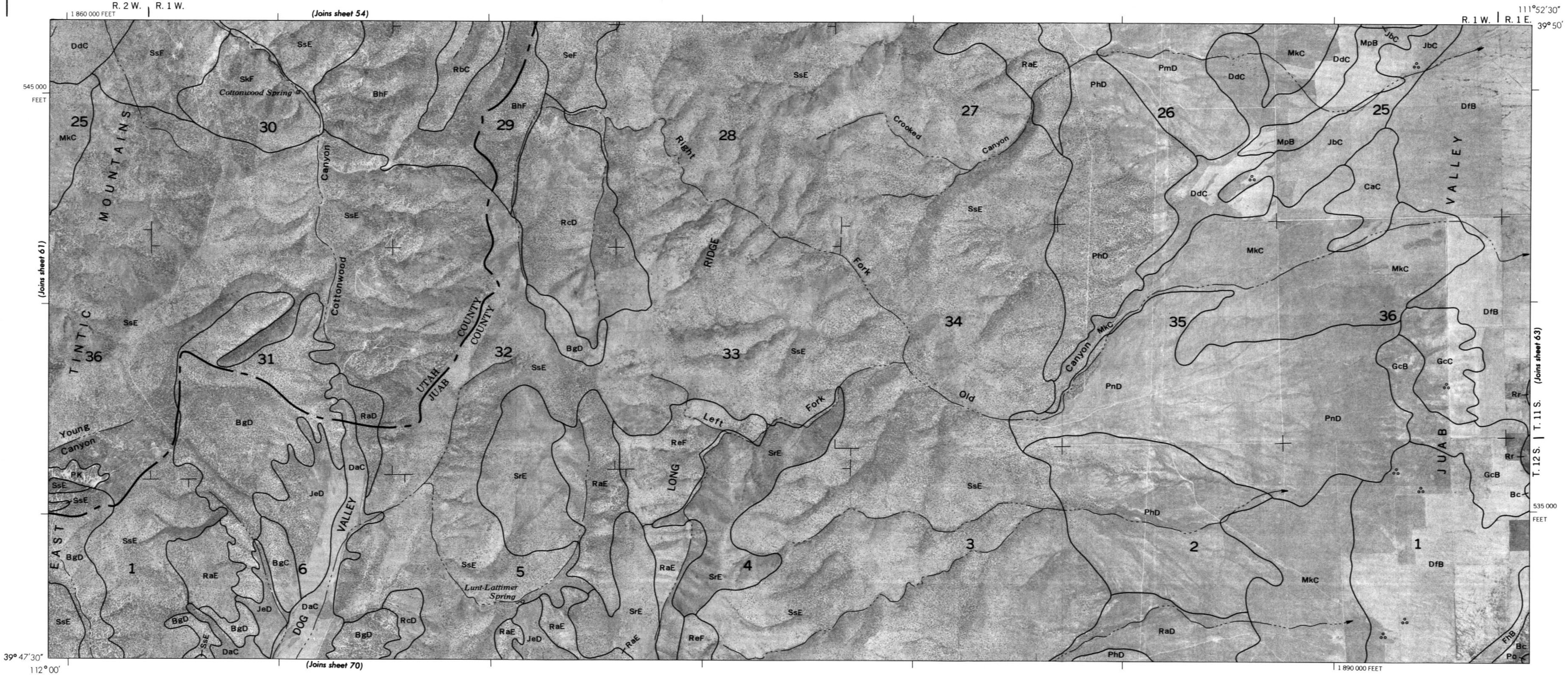
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 62

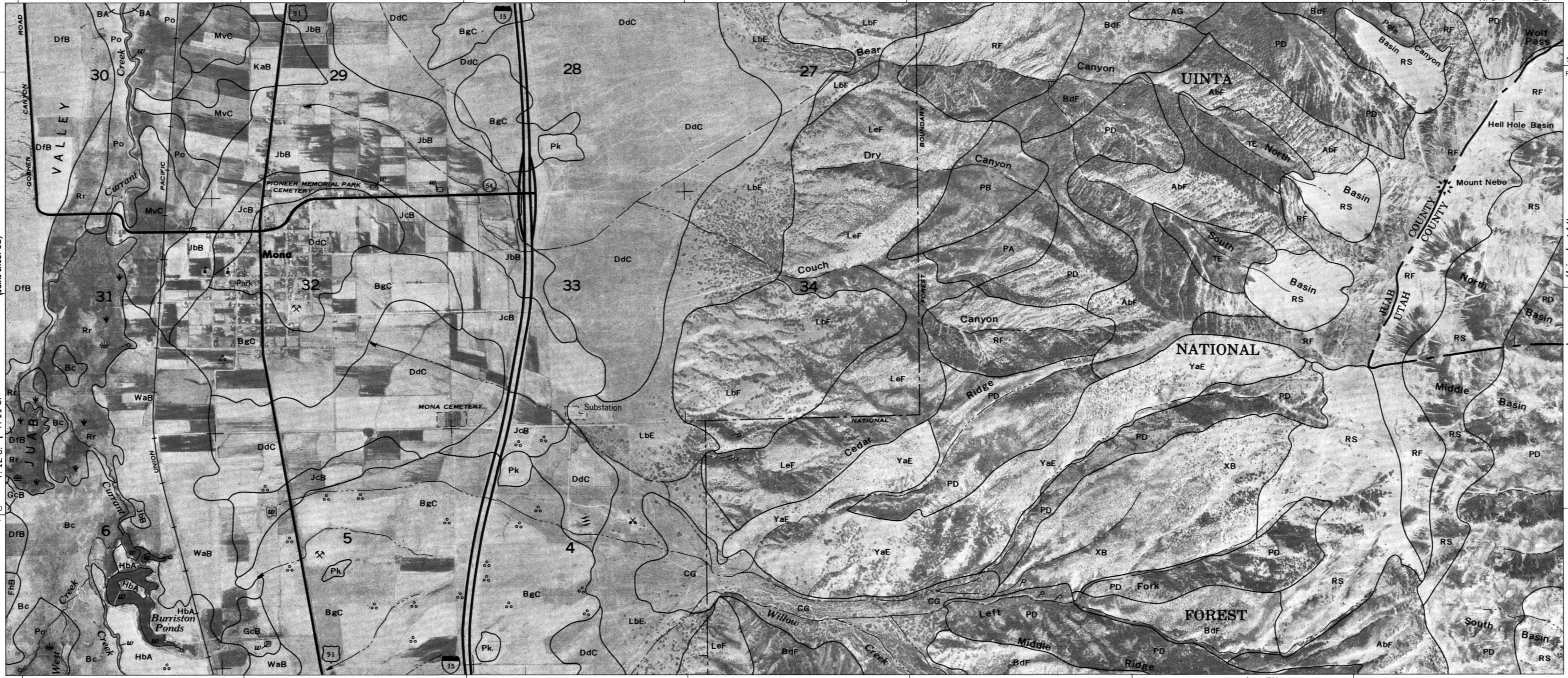


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

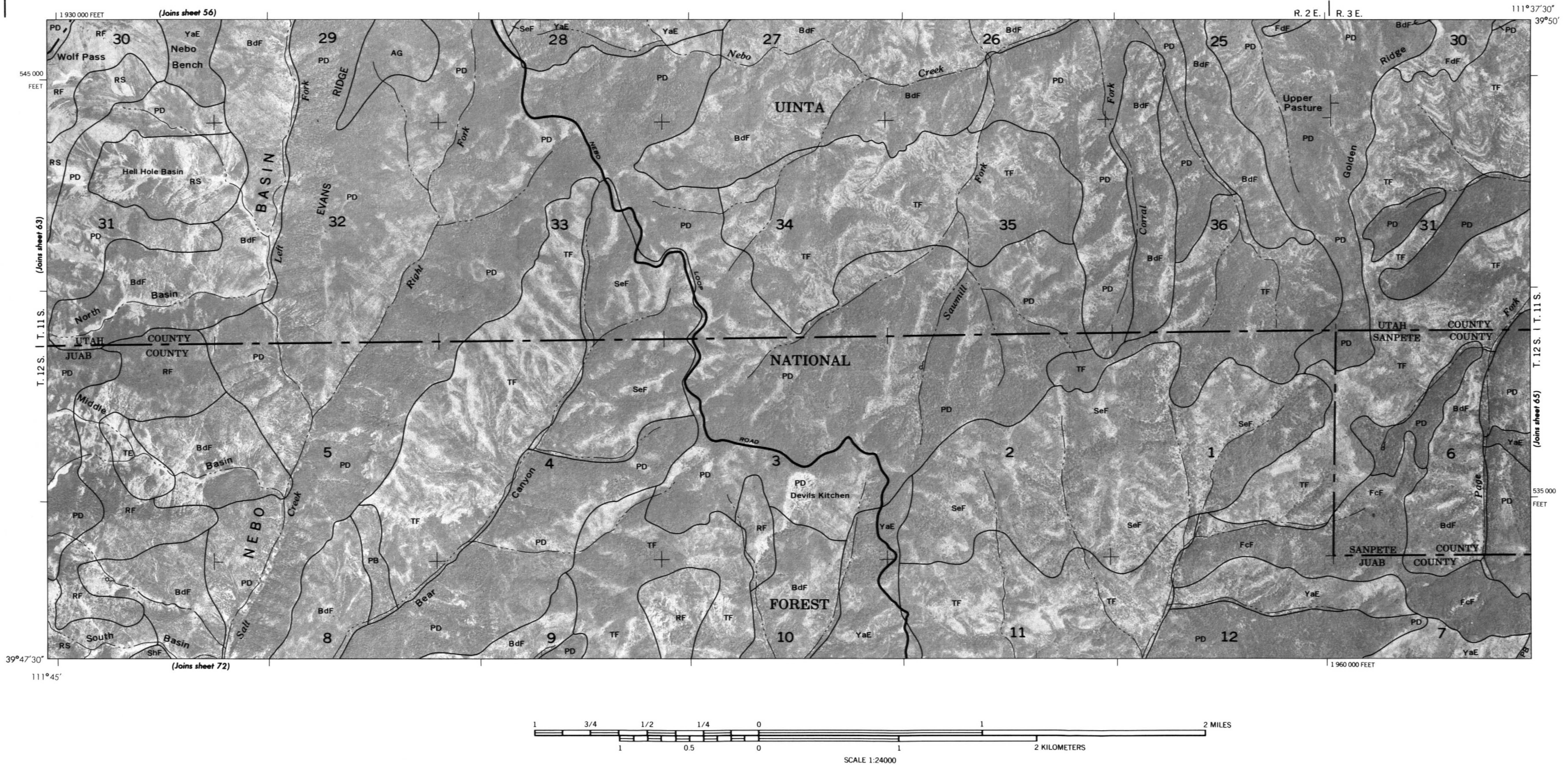
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 63

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 64

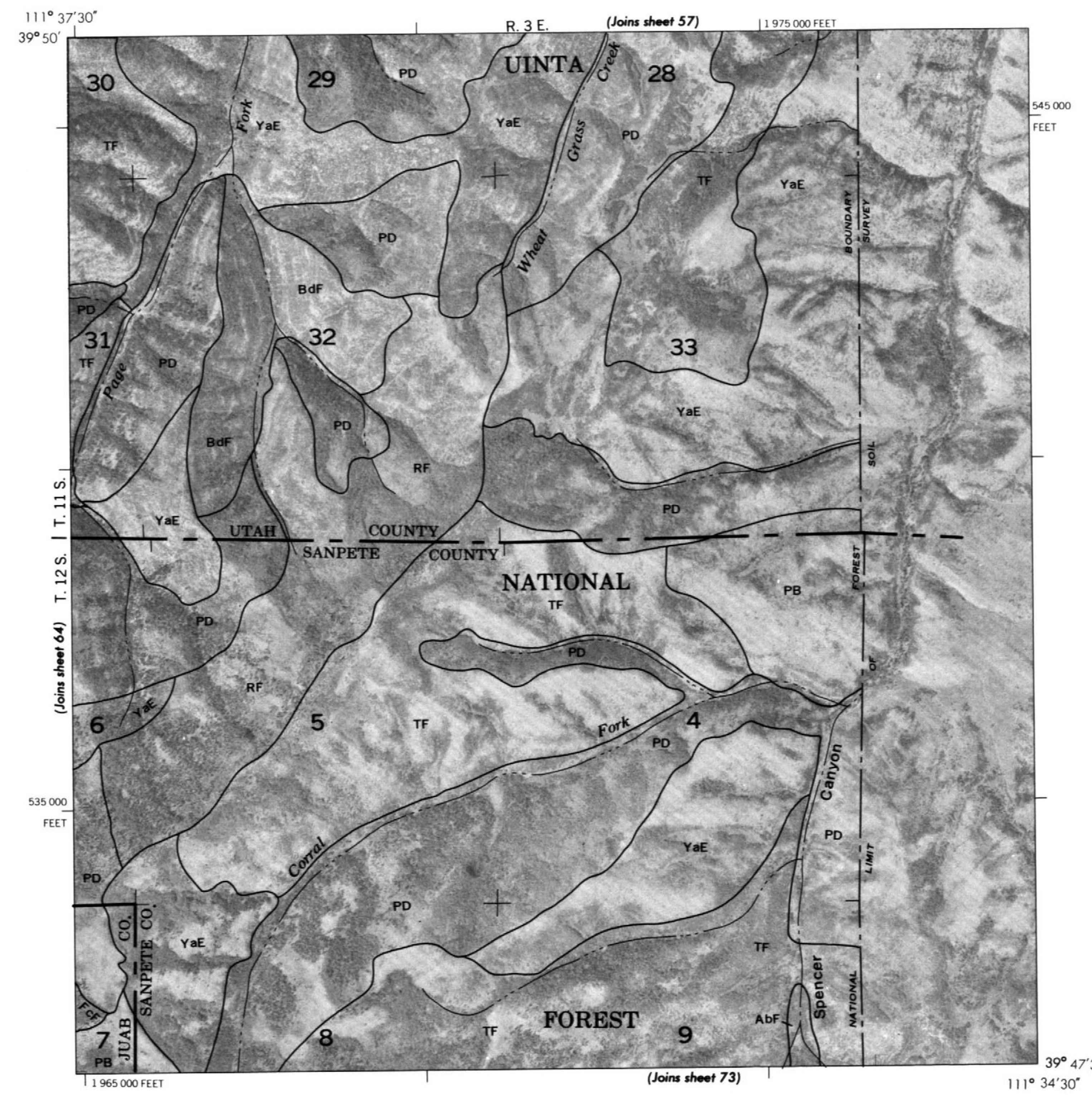


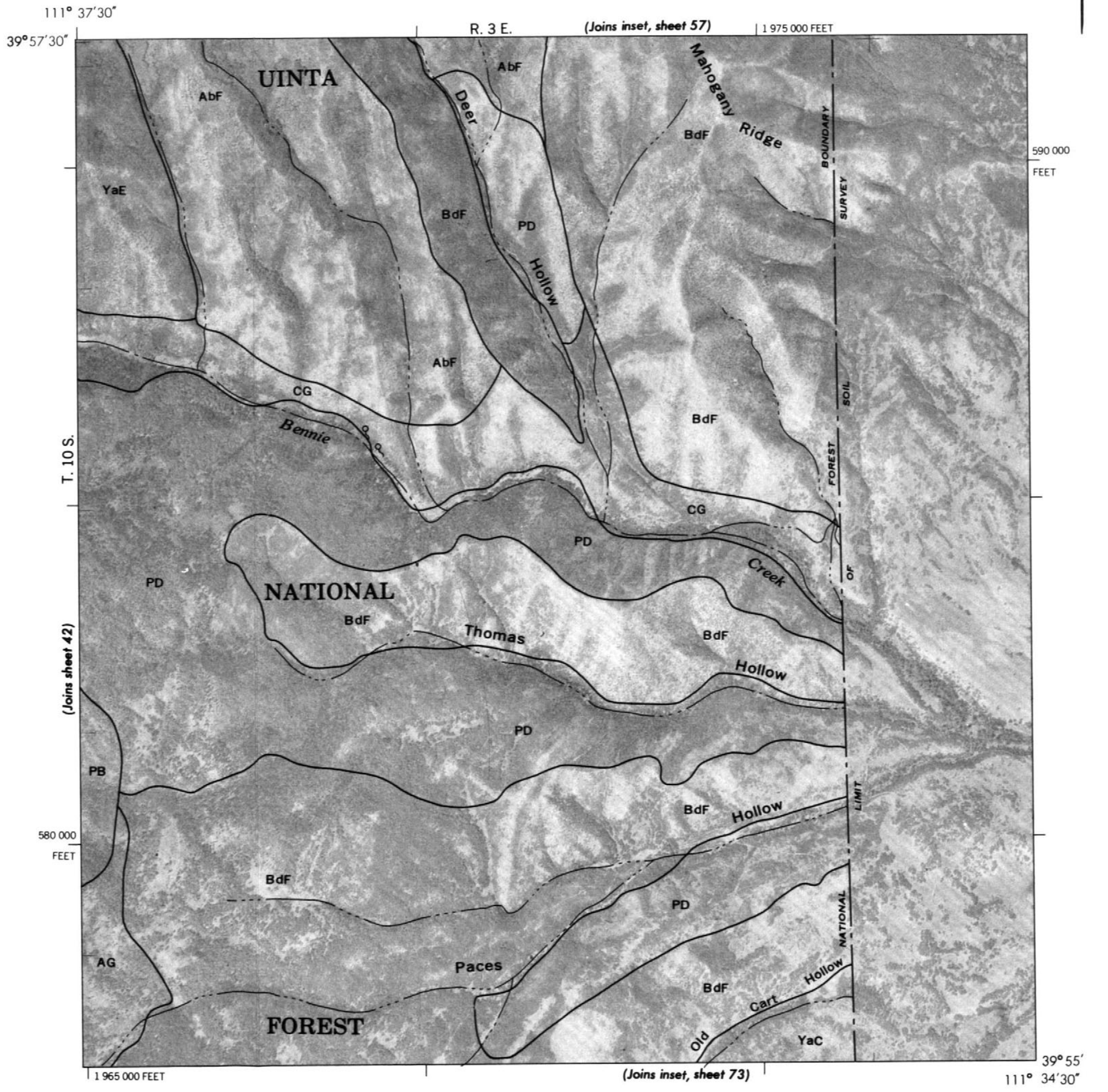
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

FAIRFIELD–NEPHI AREA, UTAH NO. 65

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



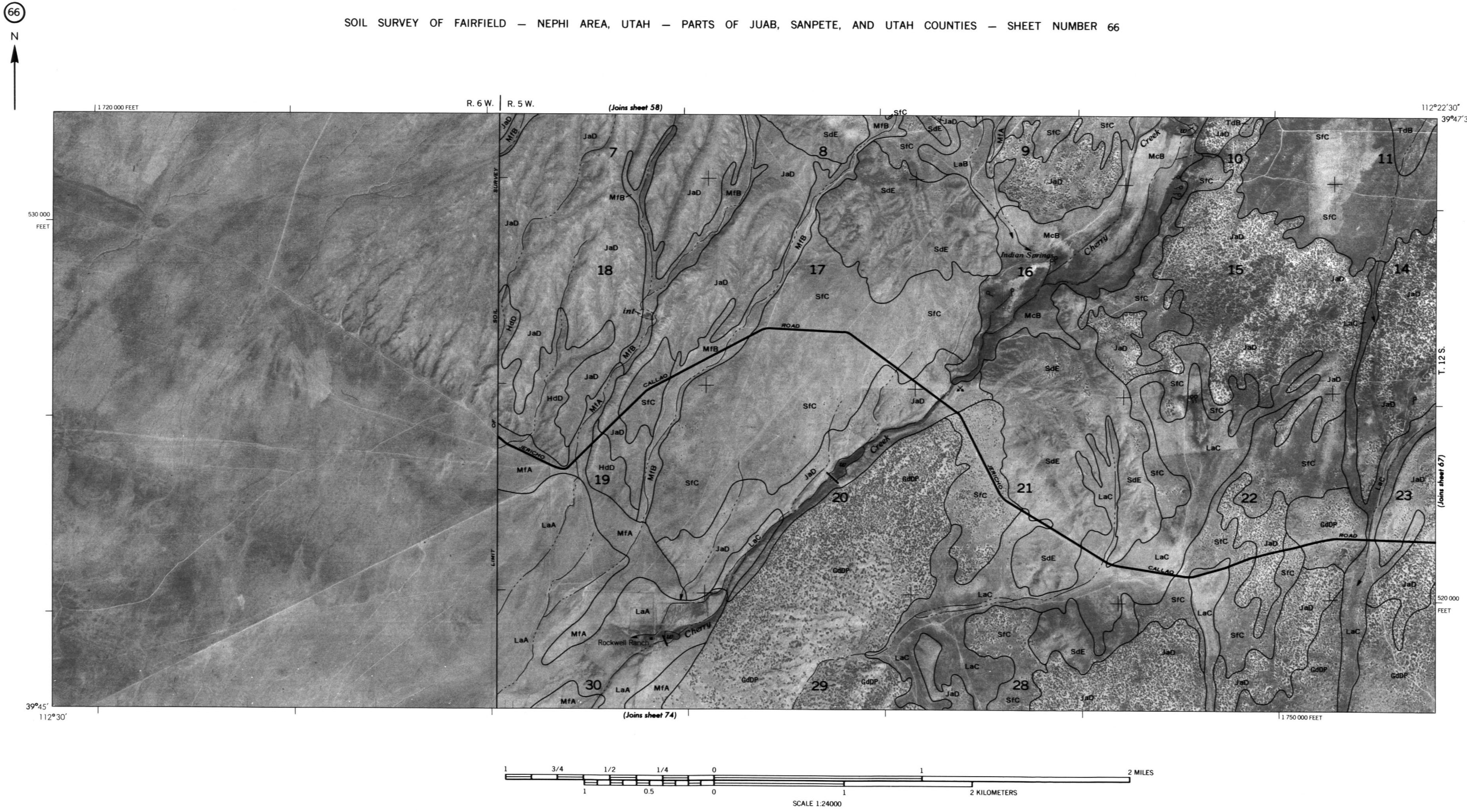


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 66



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 68

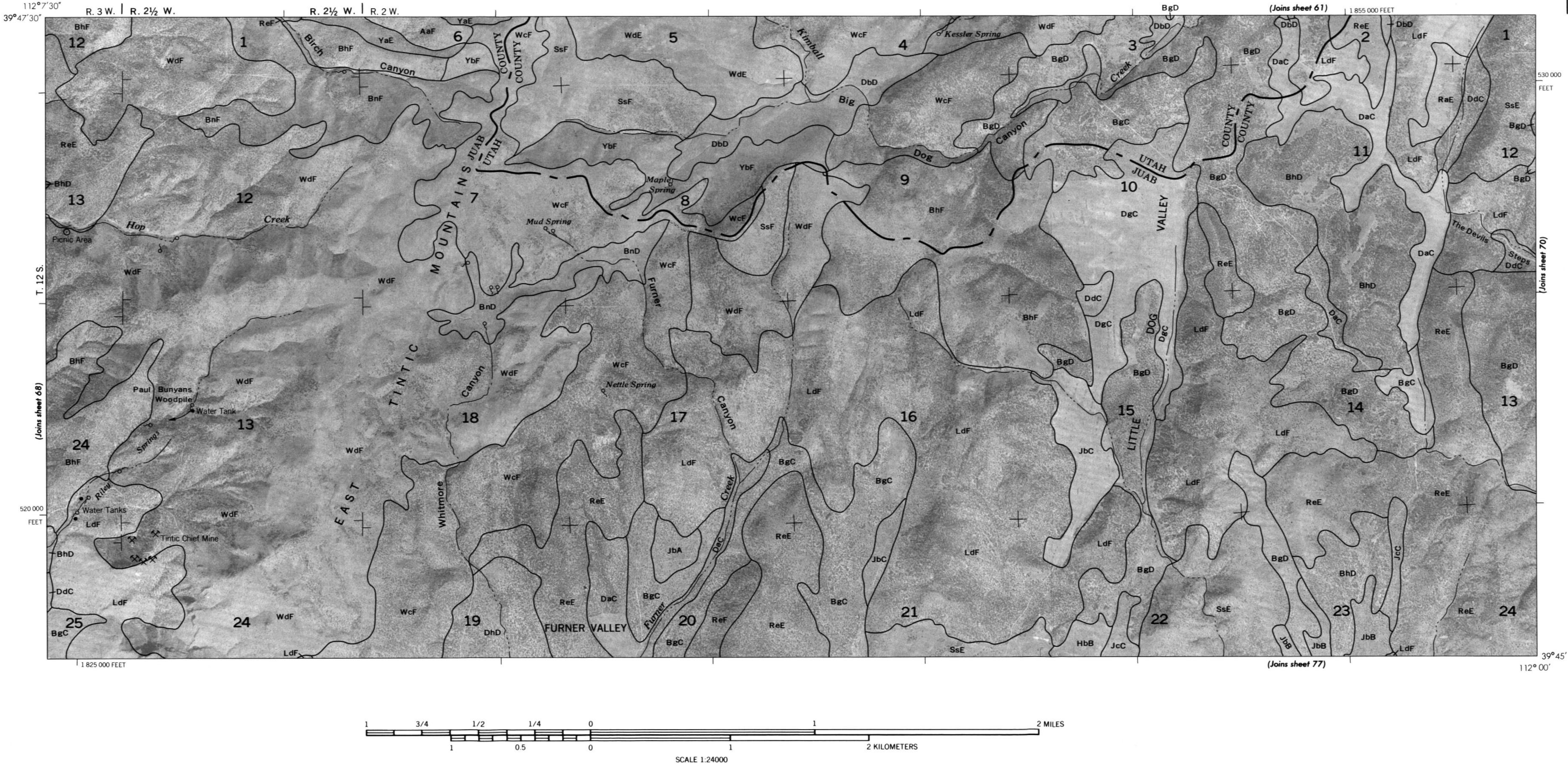


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

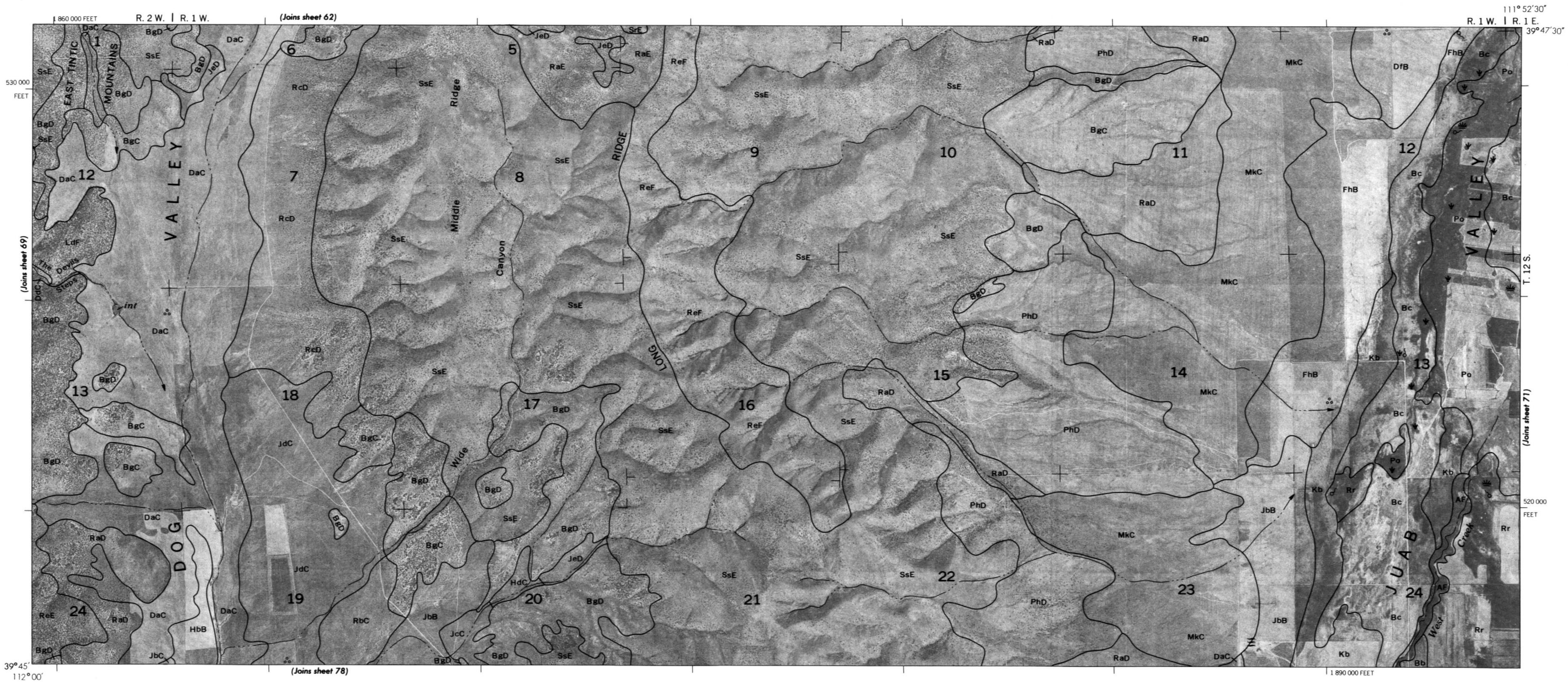


FAIRFIELD–NEPHI AREA, UTAH NO. 69

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 70



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

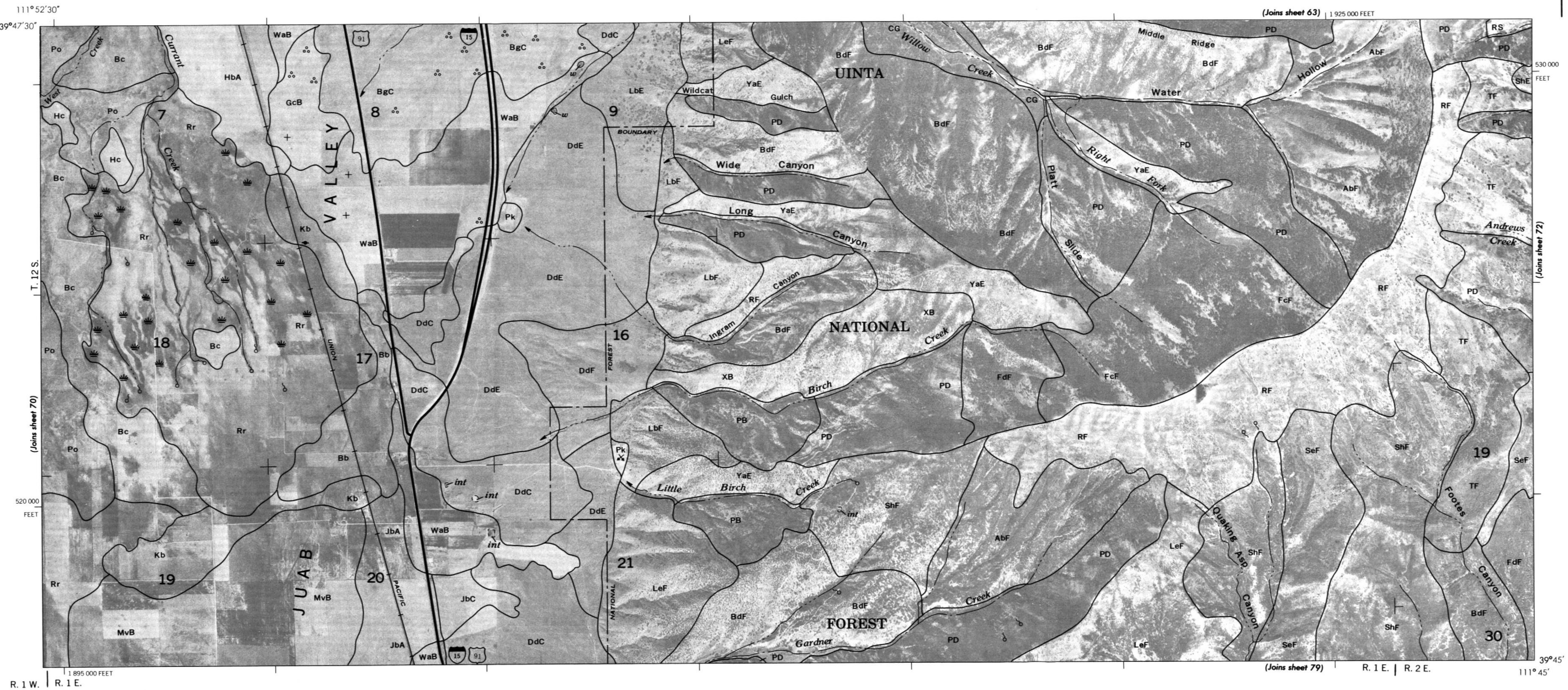
SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

71

FAIRFIELD–NEPHI AREA, UTAH NO. 71

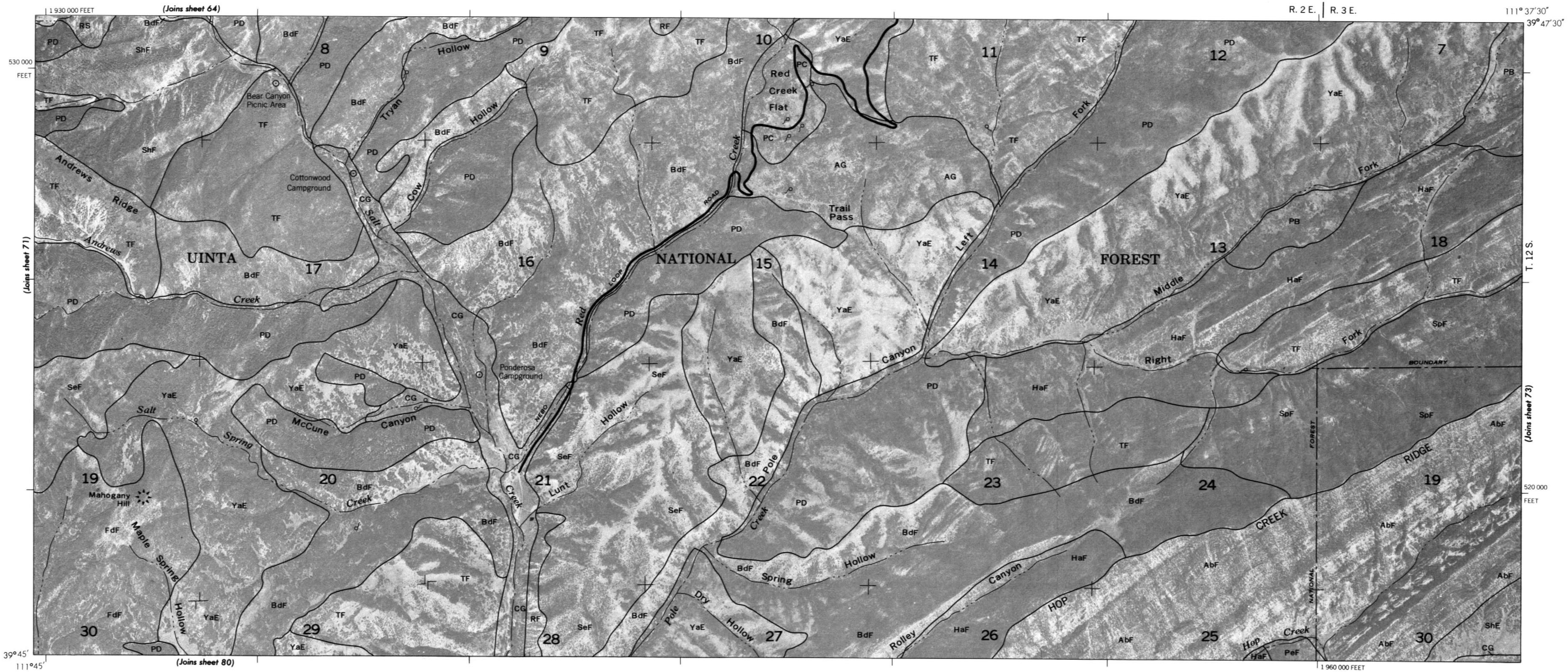
Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000

N

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 72



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

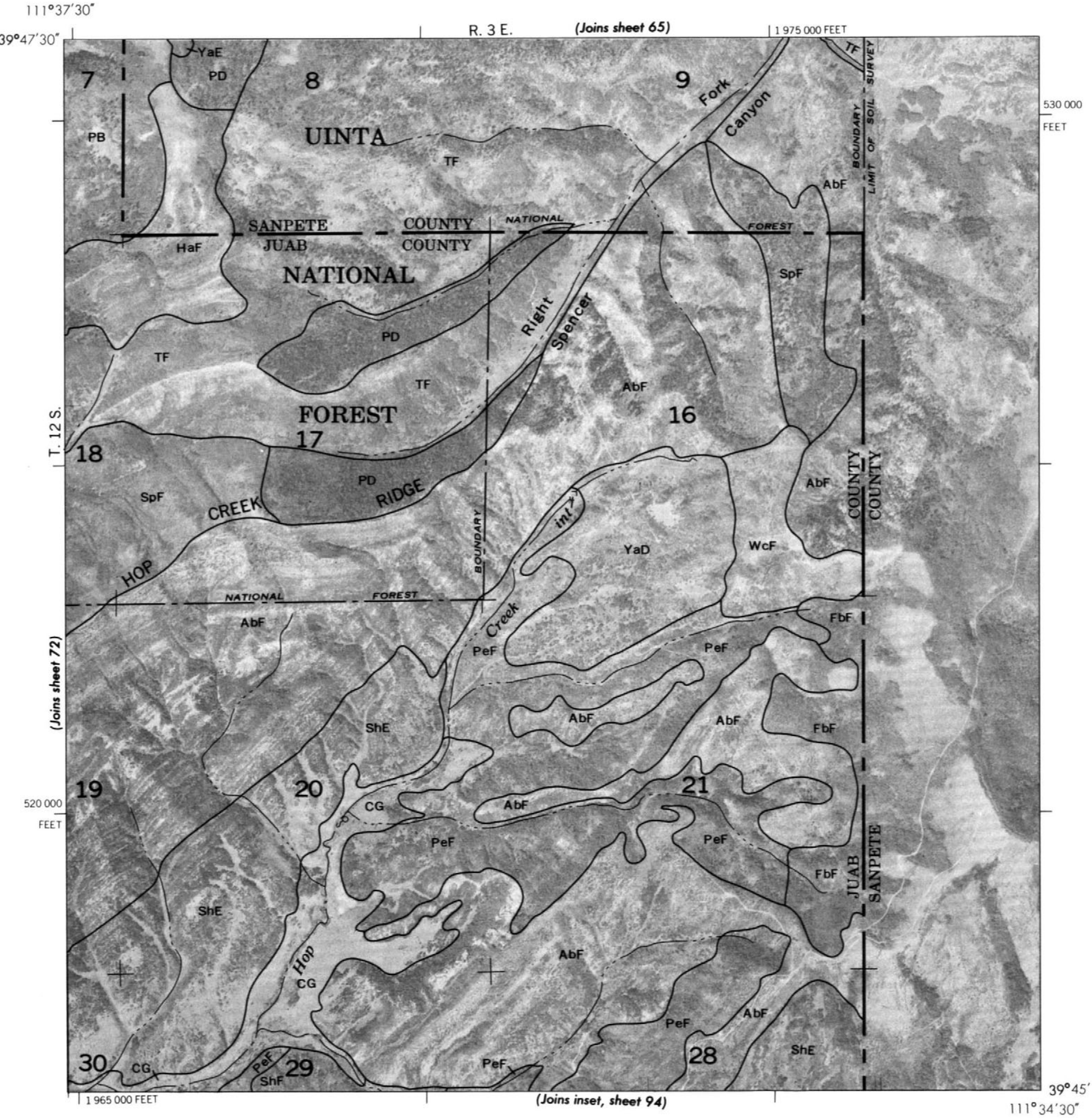
SCALE 1:24000

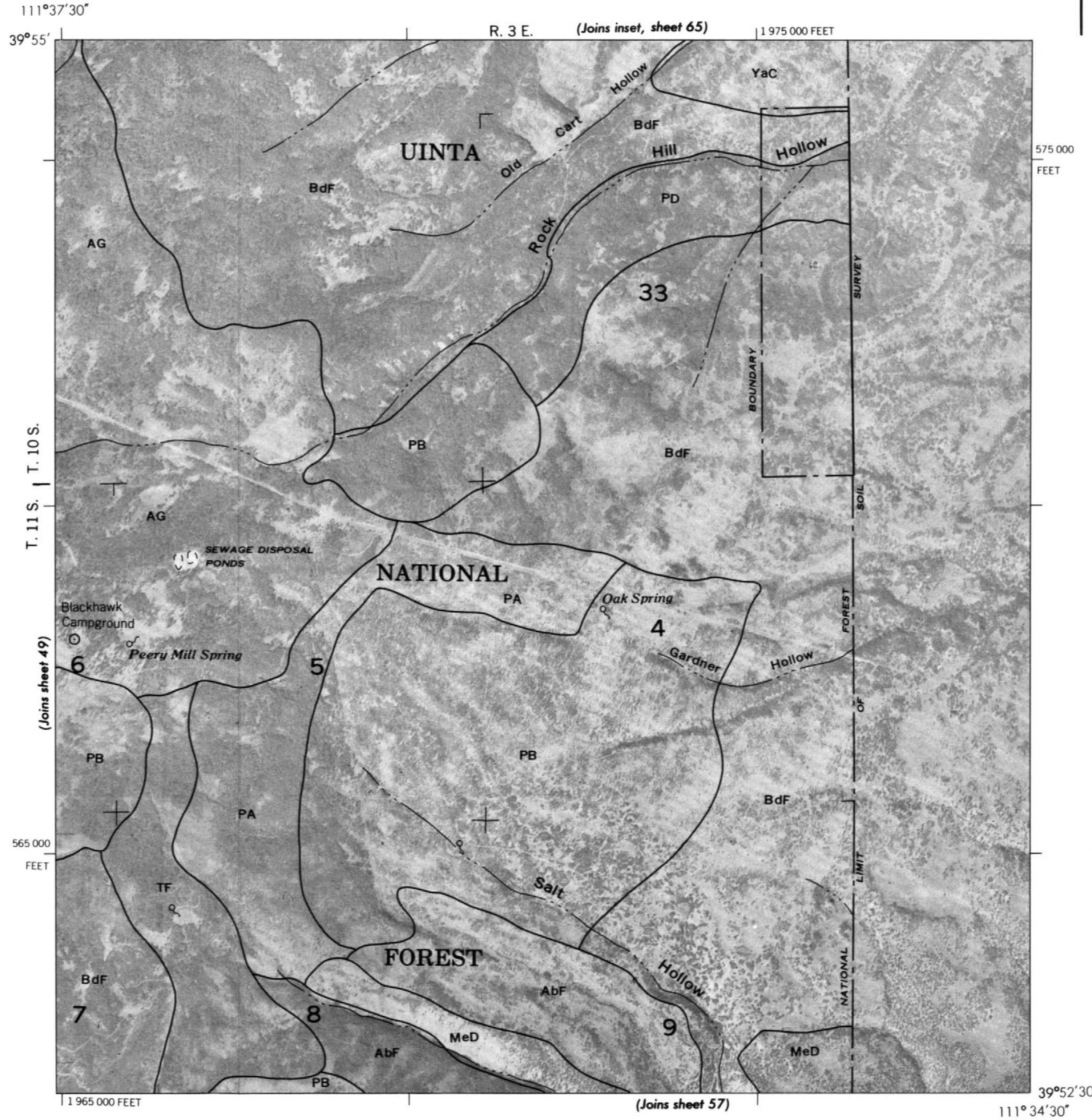
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 72

FAIRFIELD–NEPHI AREA, UTAH NO. 73

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



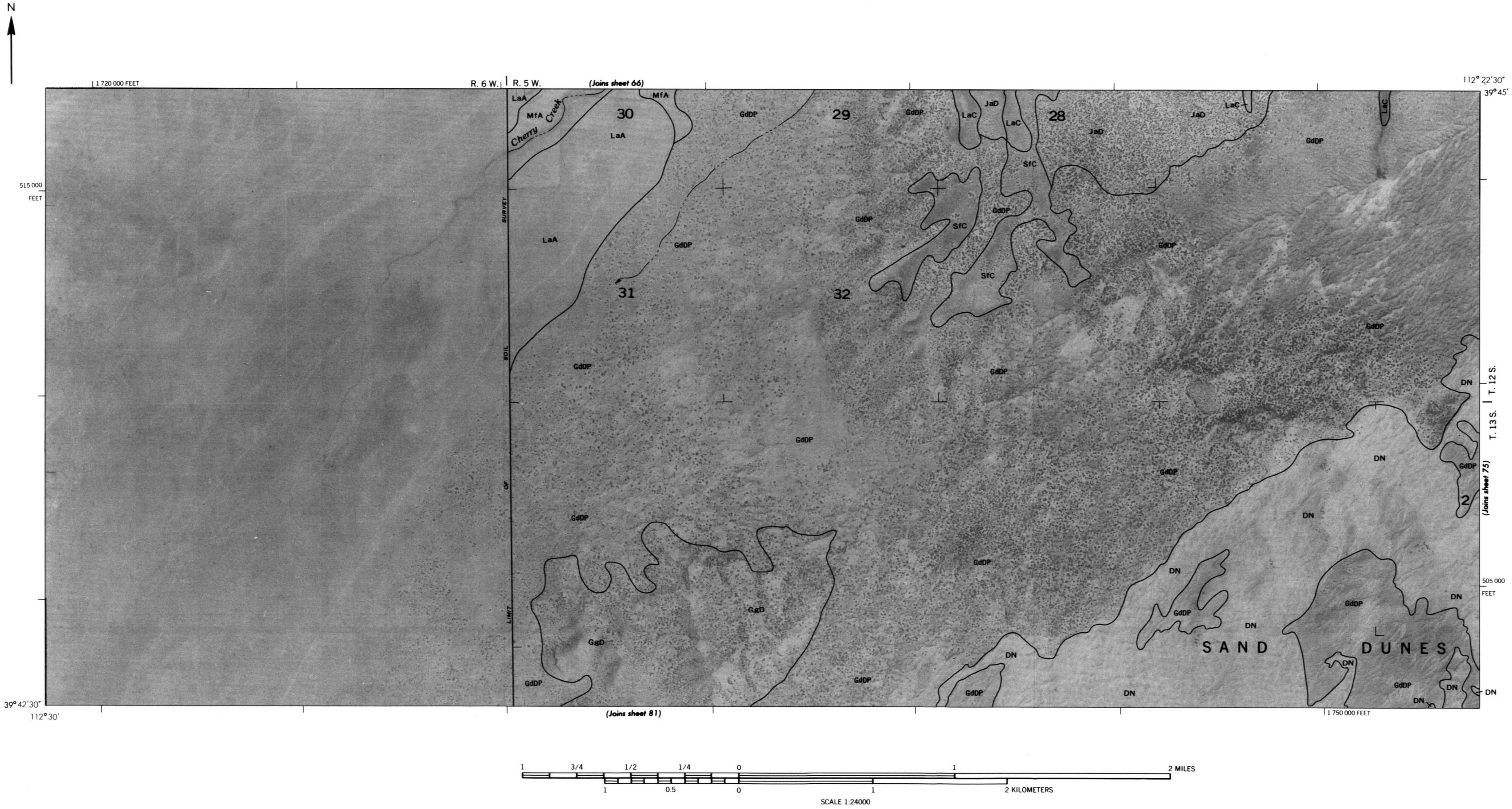


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 74

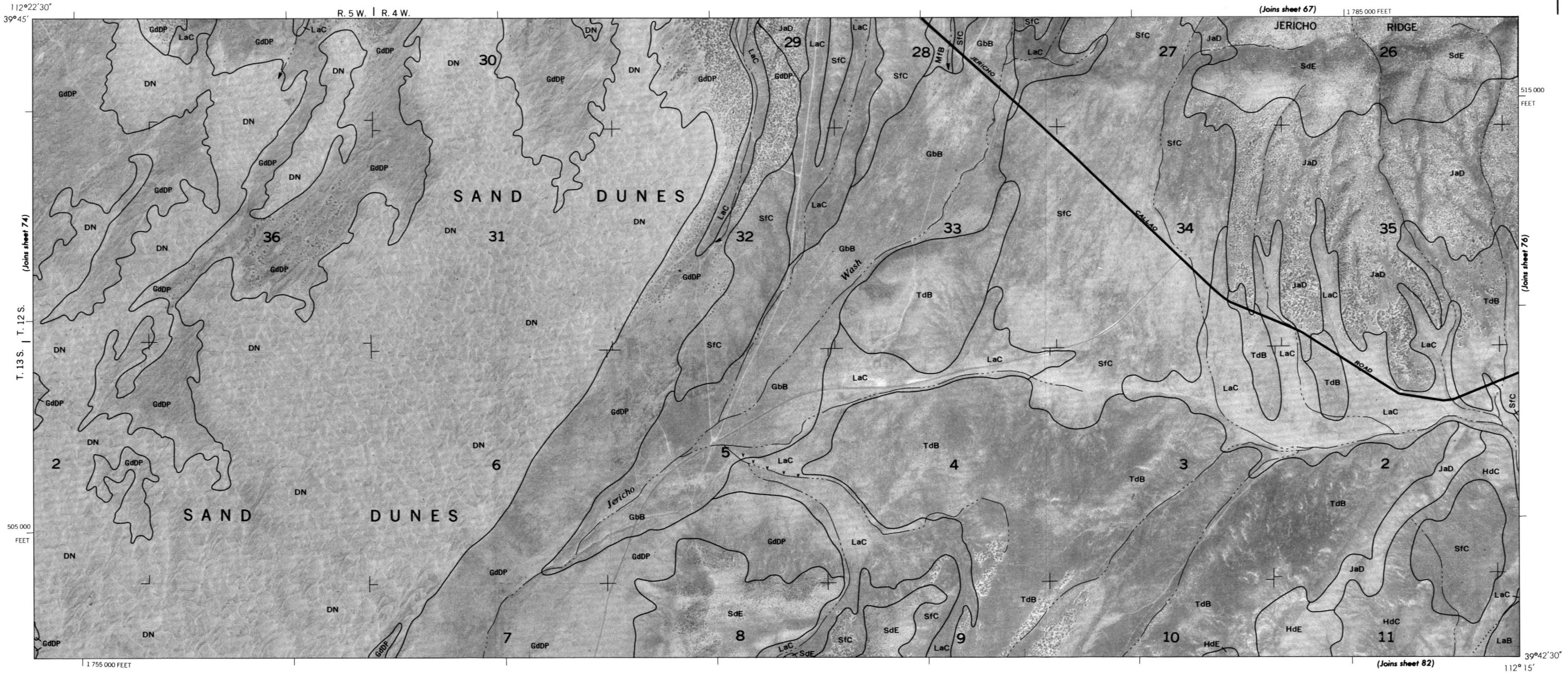


This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

FAIRFIELD–NEPHI AREA, UTAH NO. 75

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

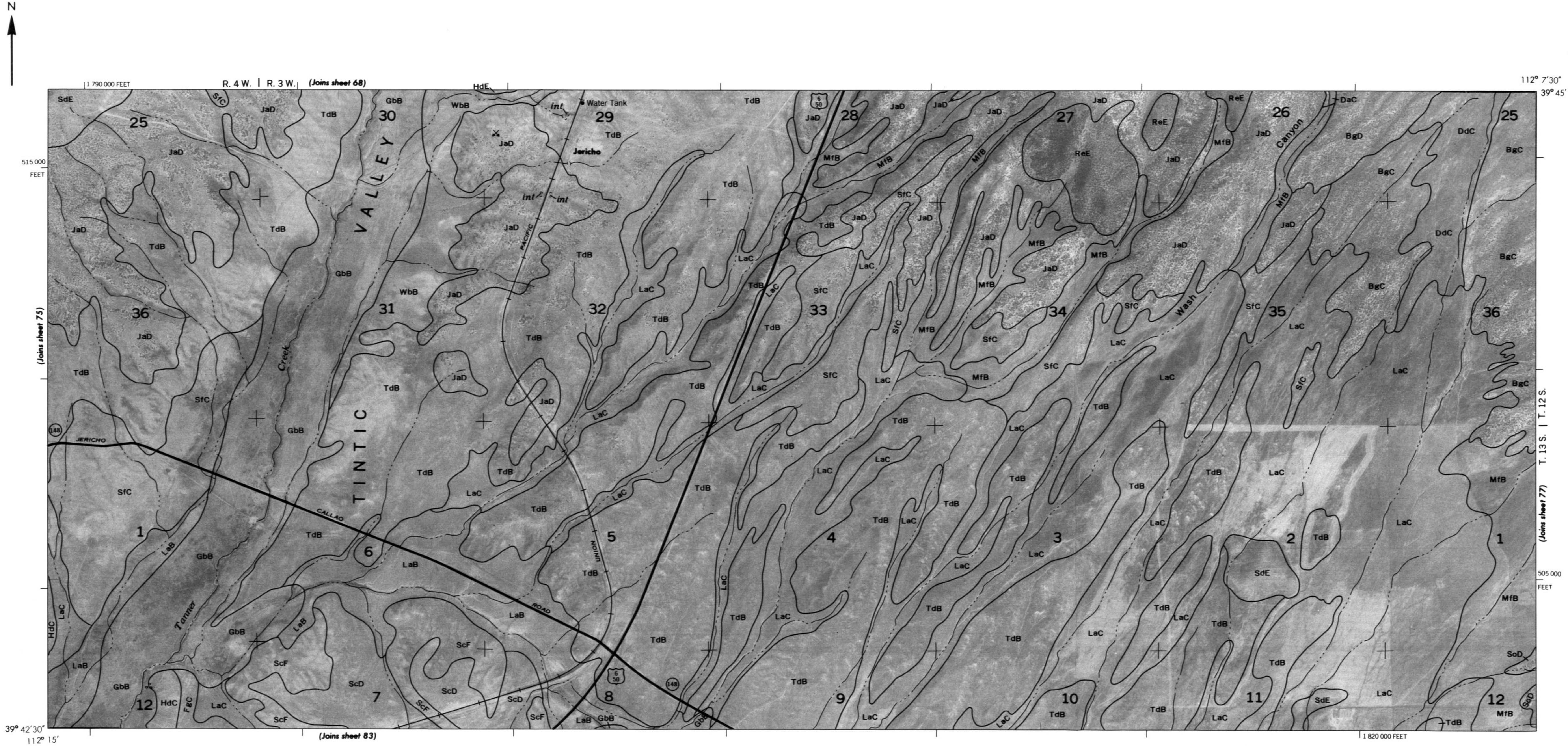


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 76



1 3/4 1/2 1/4 0 1 2 MILES

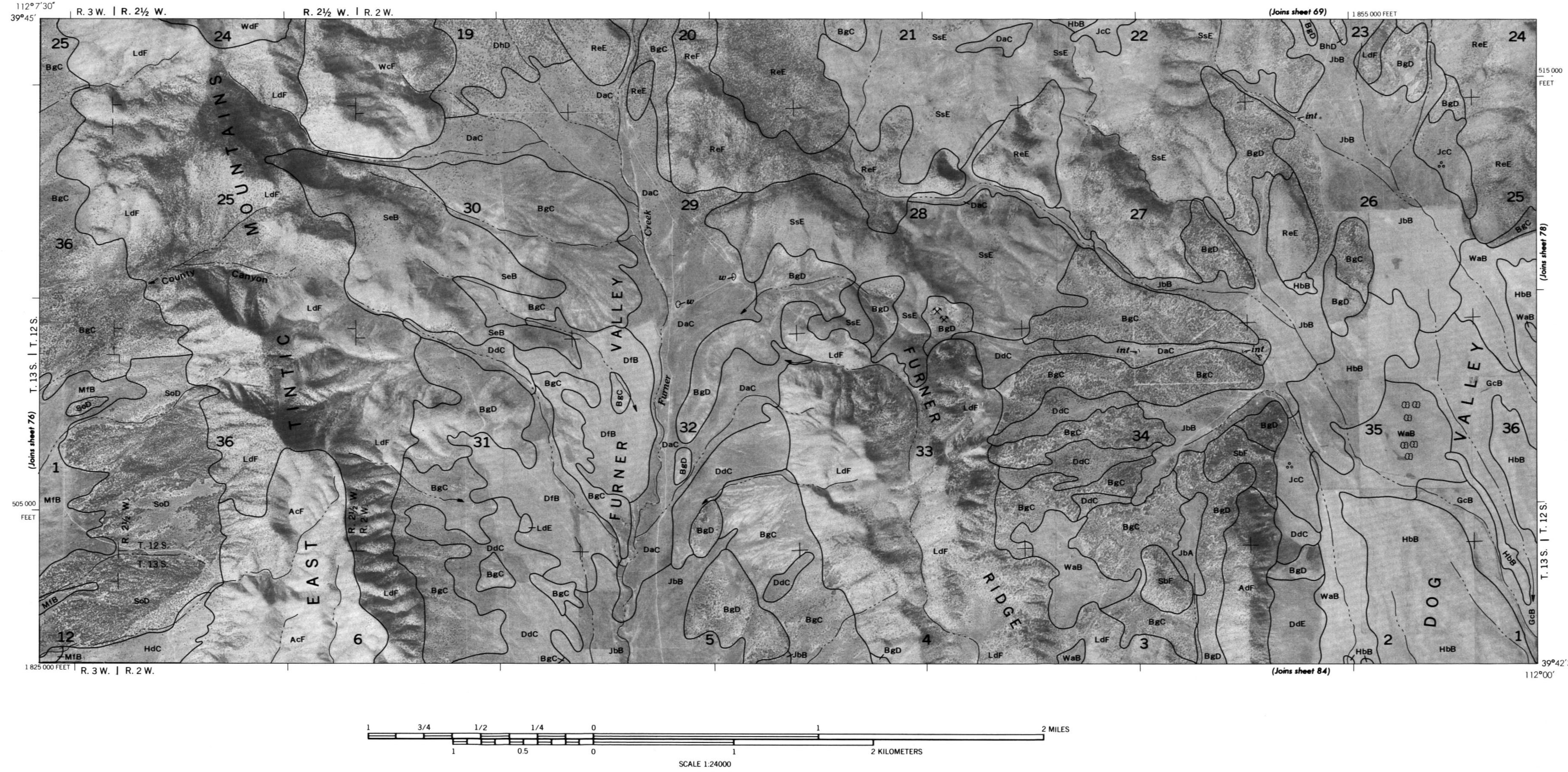
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 77

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 78

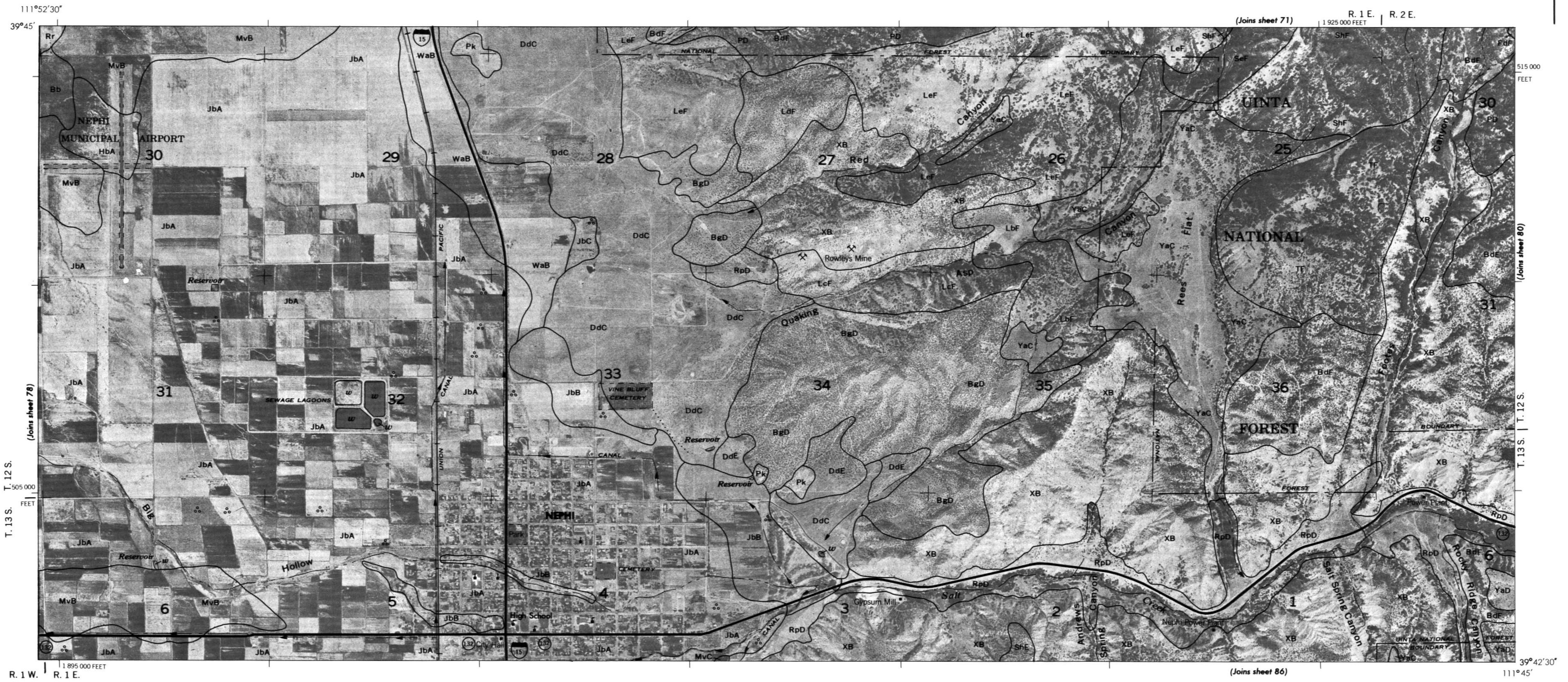


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1	3/4	1/2	1/4	0		1		2 MILES
	1		0.5	0	1		2 KILOMETERS	

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 79

Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 80



1 3/4 1/2 1/4 0 1 2 MILES

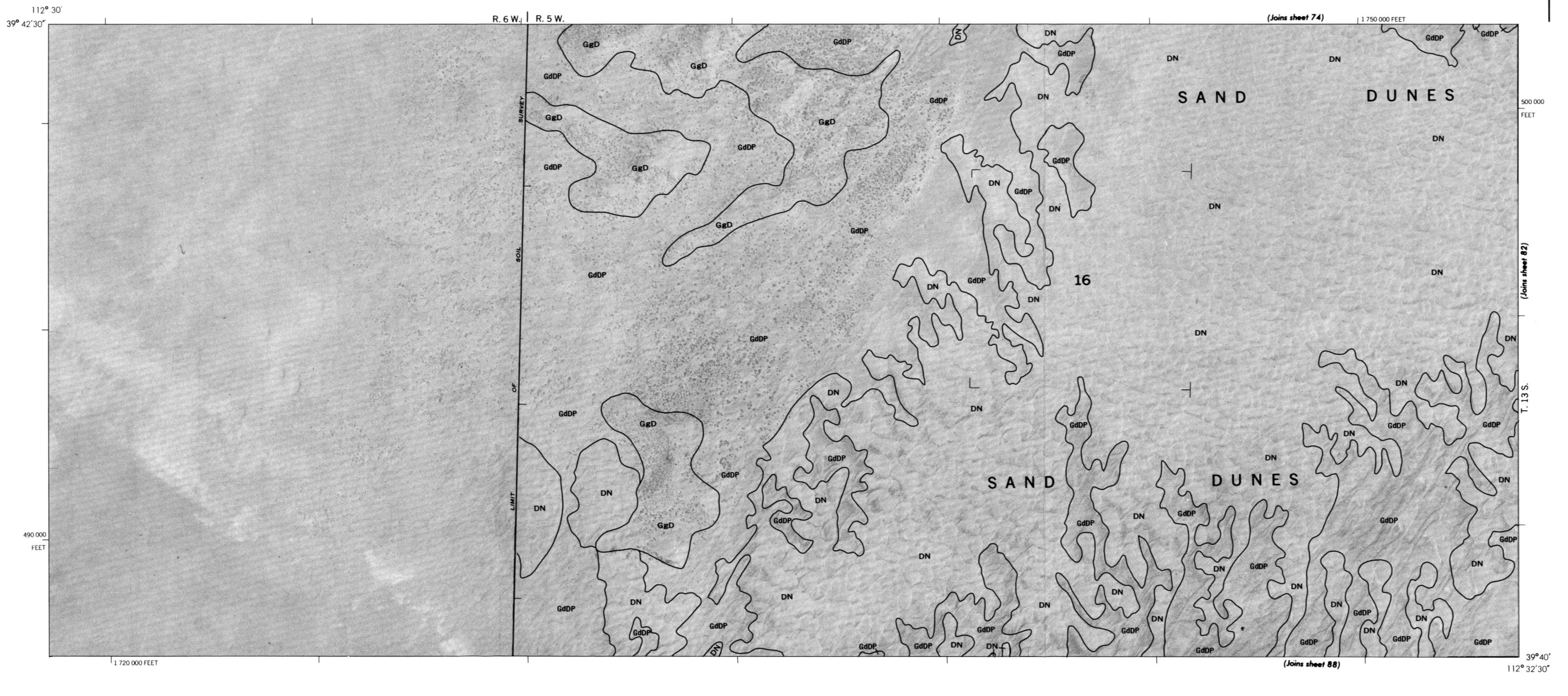
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 81

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

N

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 82



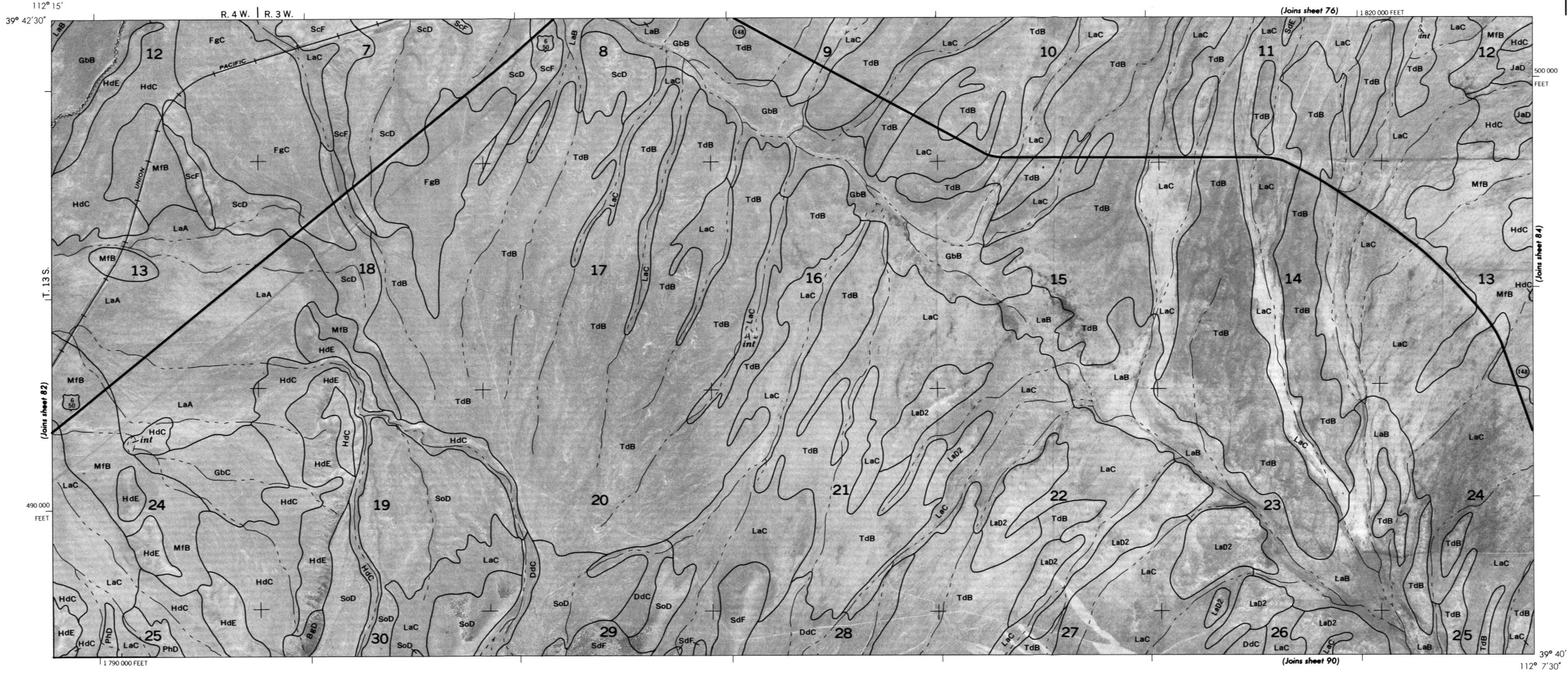
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



FAIRFIELD–NEPHI AREA, UTAH NO. 83

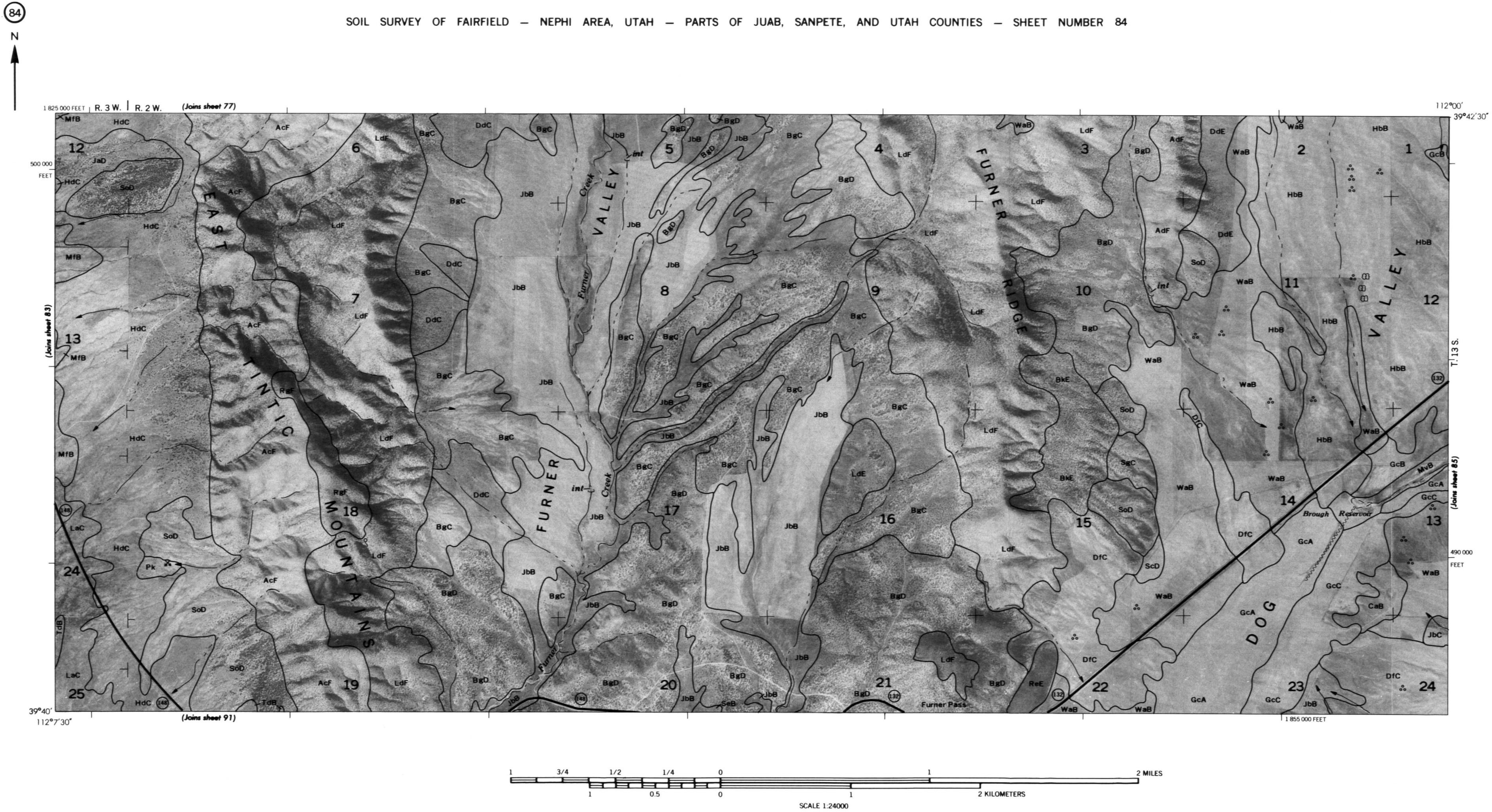
Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

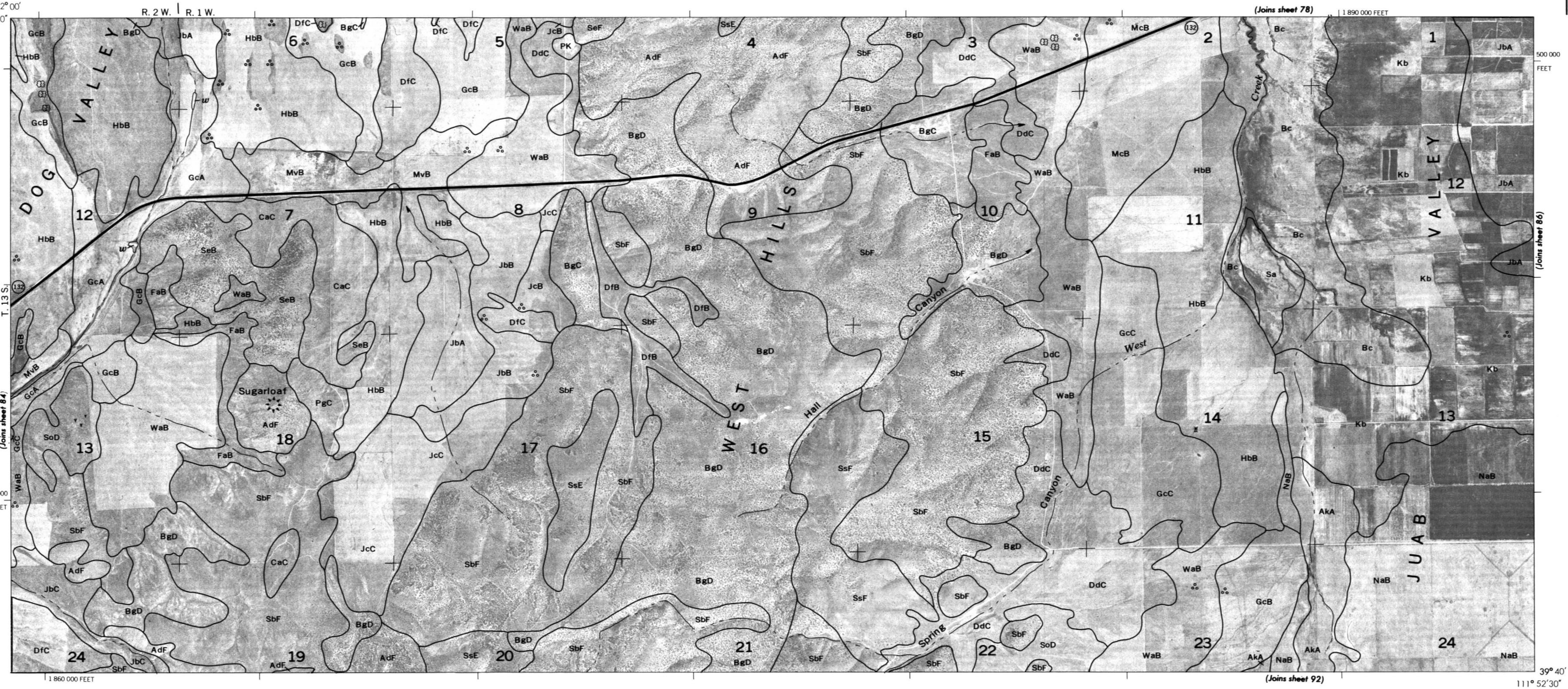
SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 84



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 84



Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 86

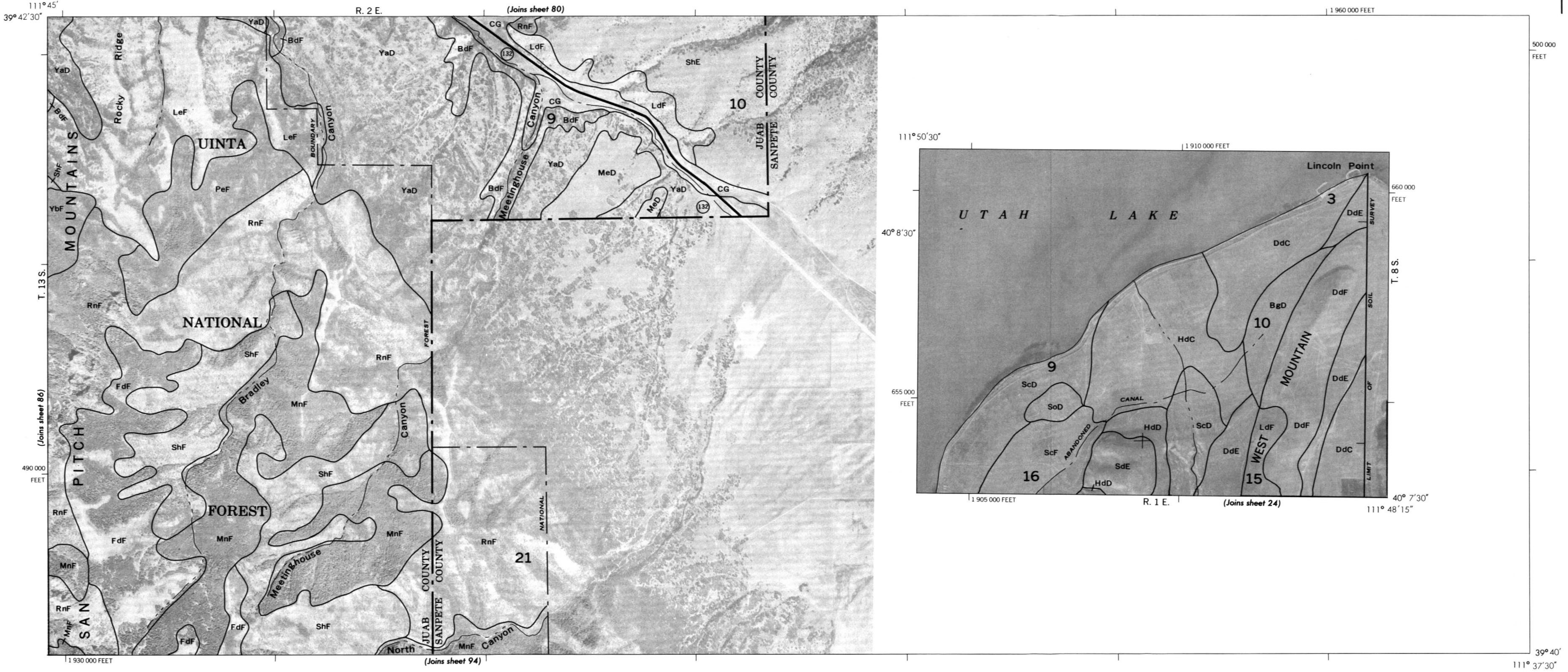


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



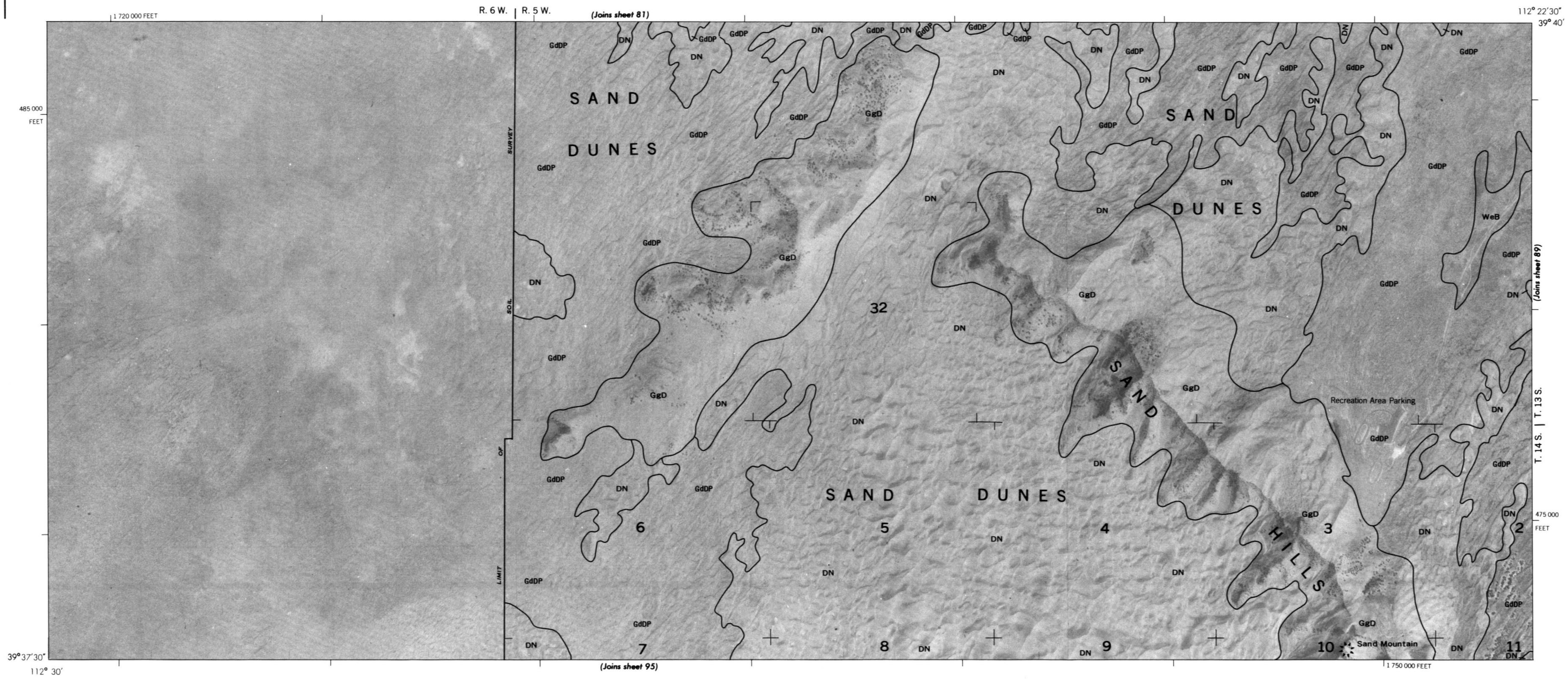
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 87

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 89

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

N

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 90



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD-NEPHI AREA, UTAH NO. 91

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 92



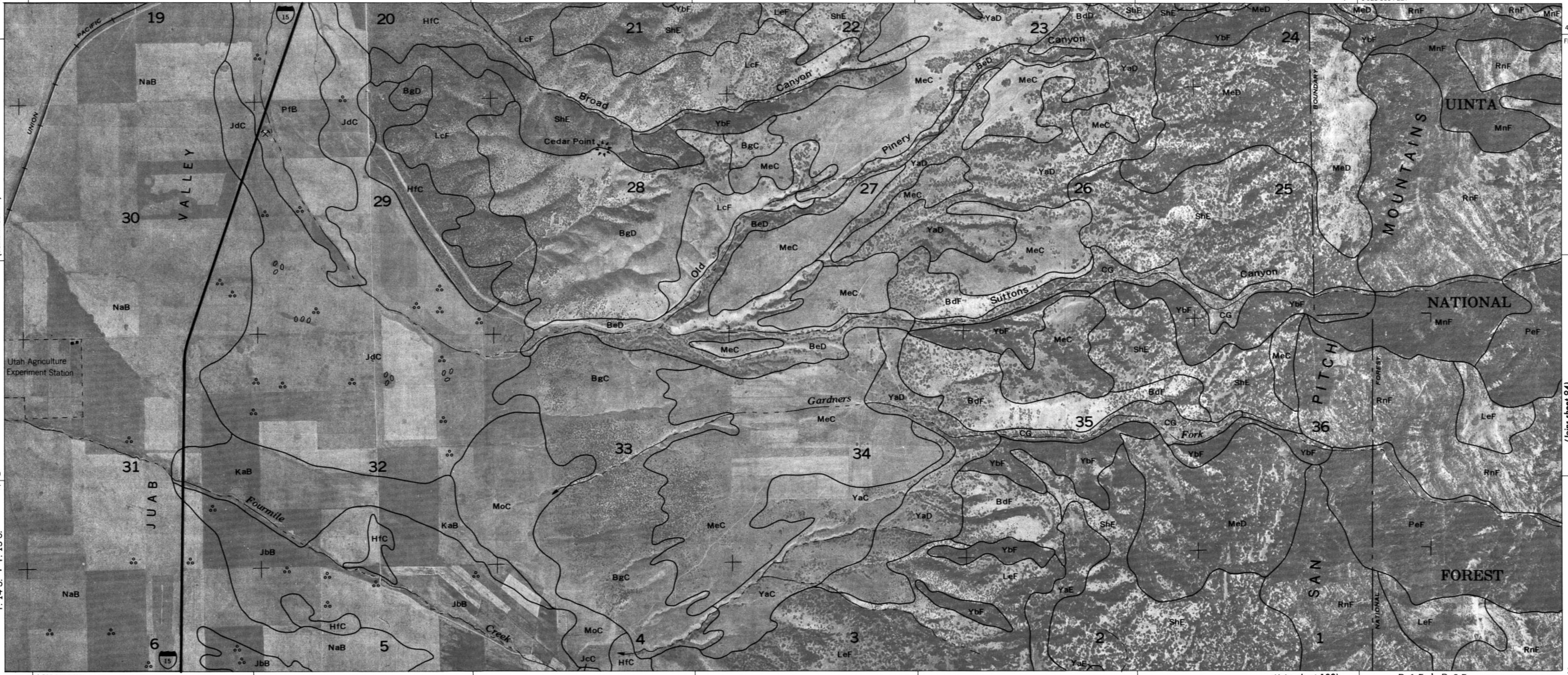
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 92



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 93

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

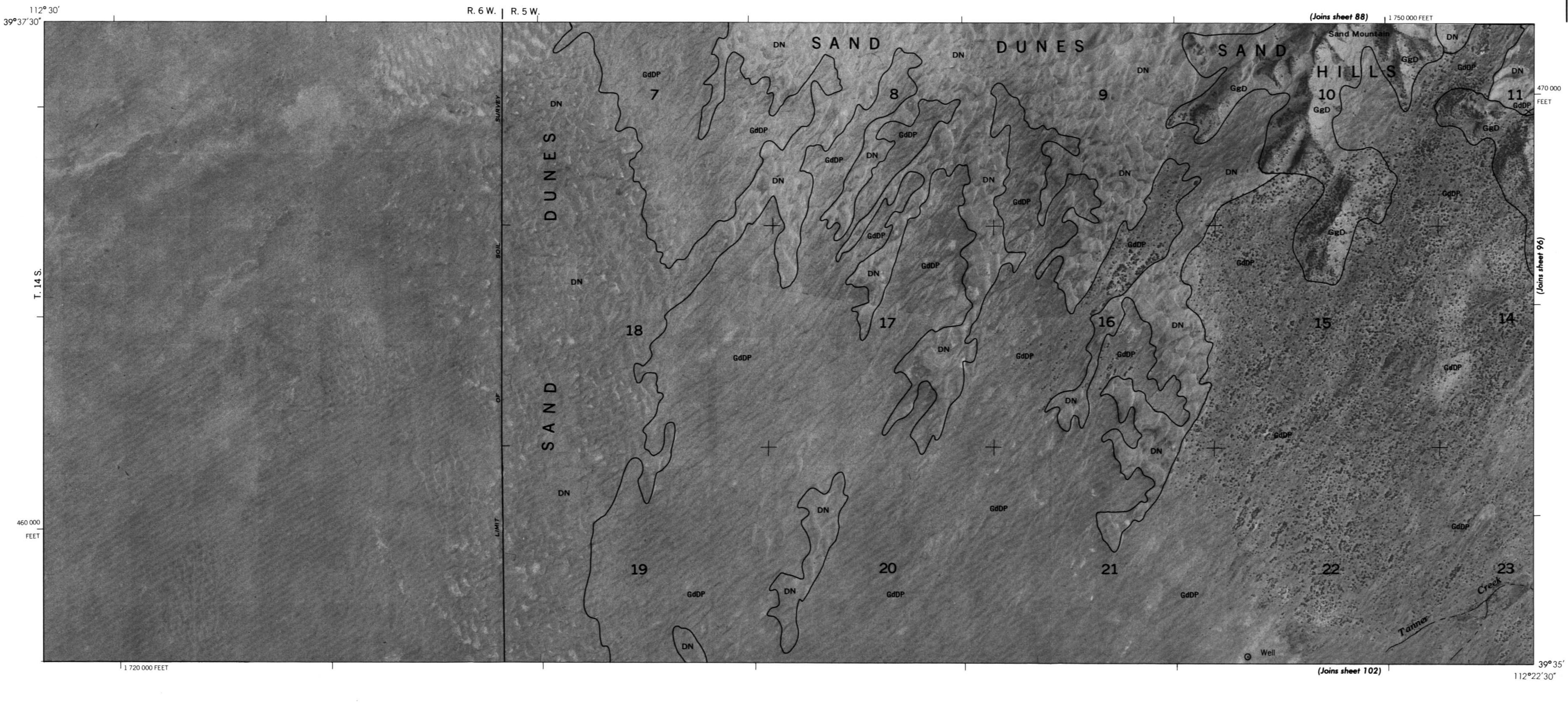
SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 94





SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

FAIRFIELD–NEPHI AREA, UTAH NO. 95

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000

96



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 97

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 98



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

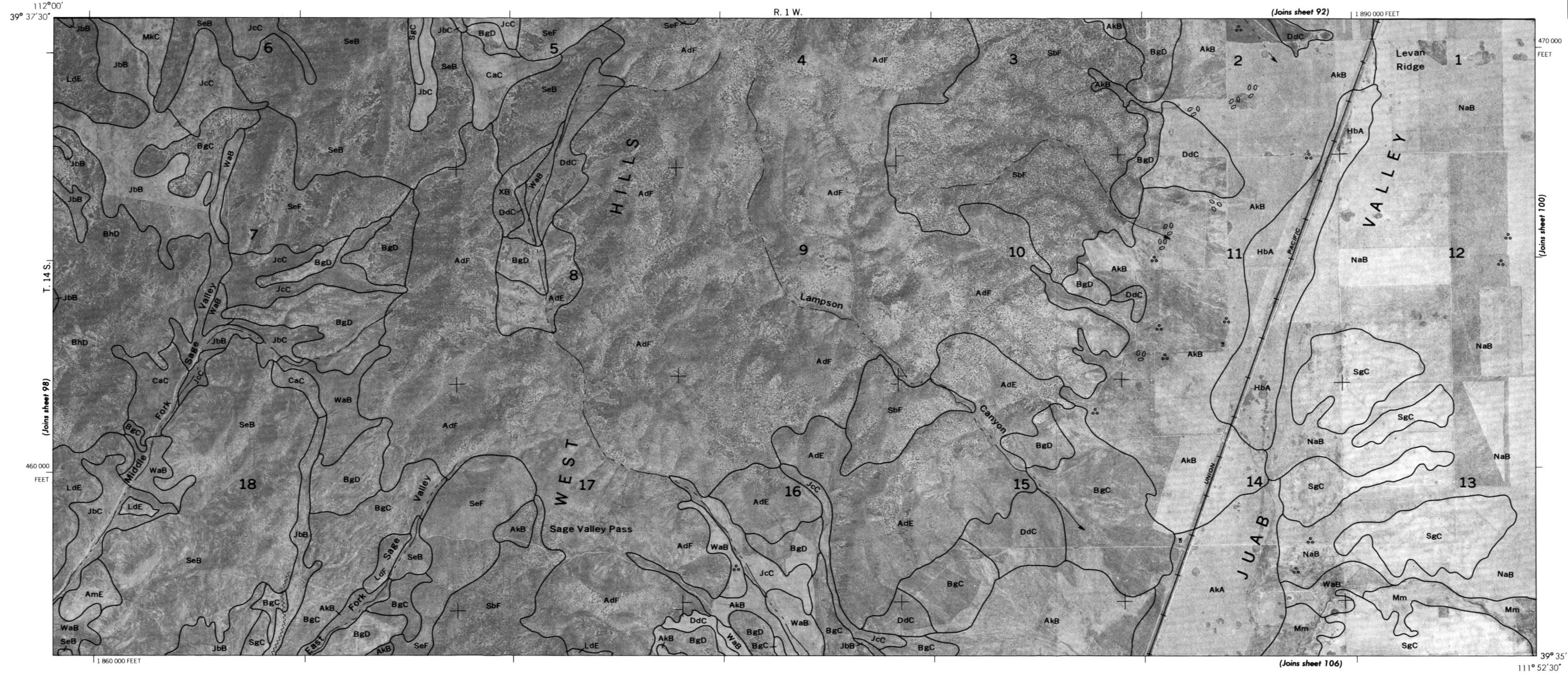
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

99

N

FAIRFIELD–NEPHI AREA, UTAH NO. 99

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

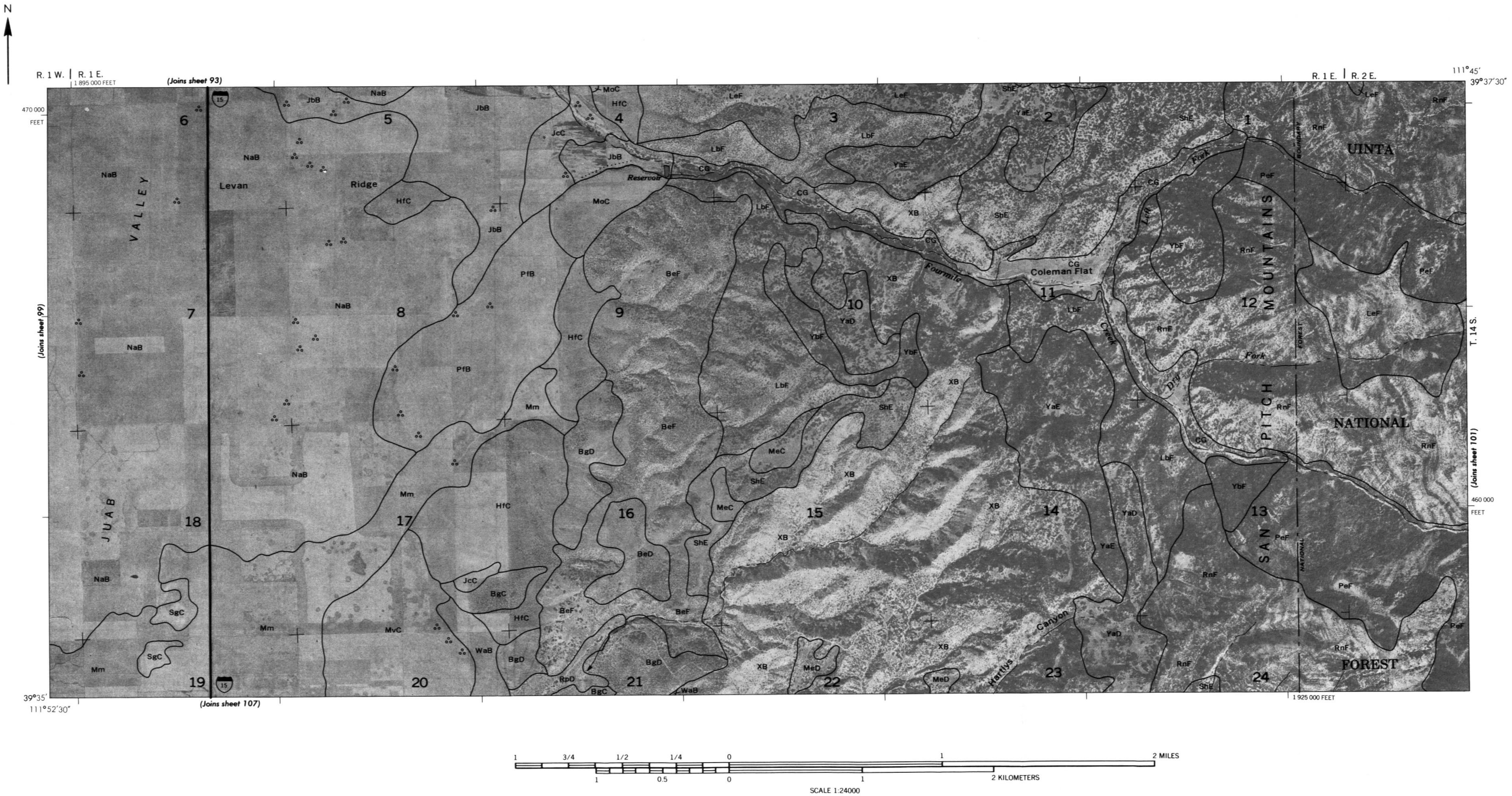


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 100



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 101

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

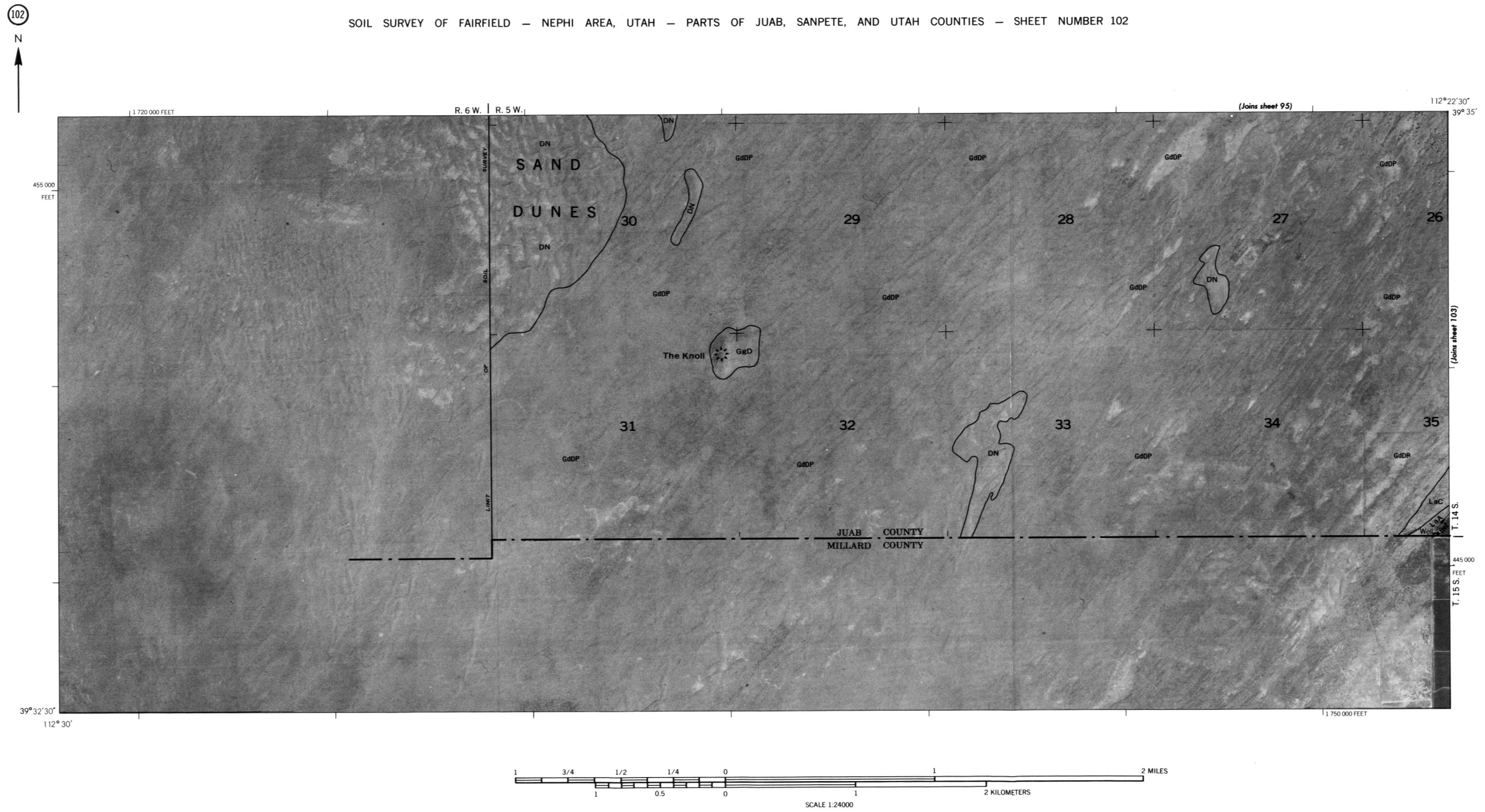


SCALE 1:24000

1 3/4 1/2 1/4 0 1 2 MILES

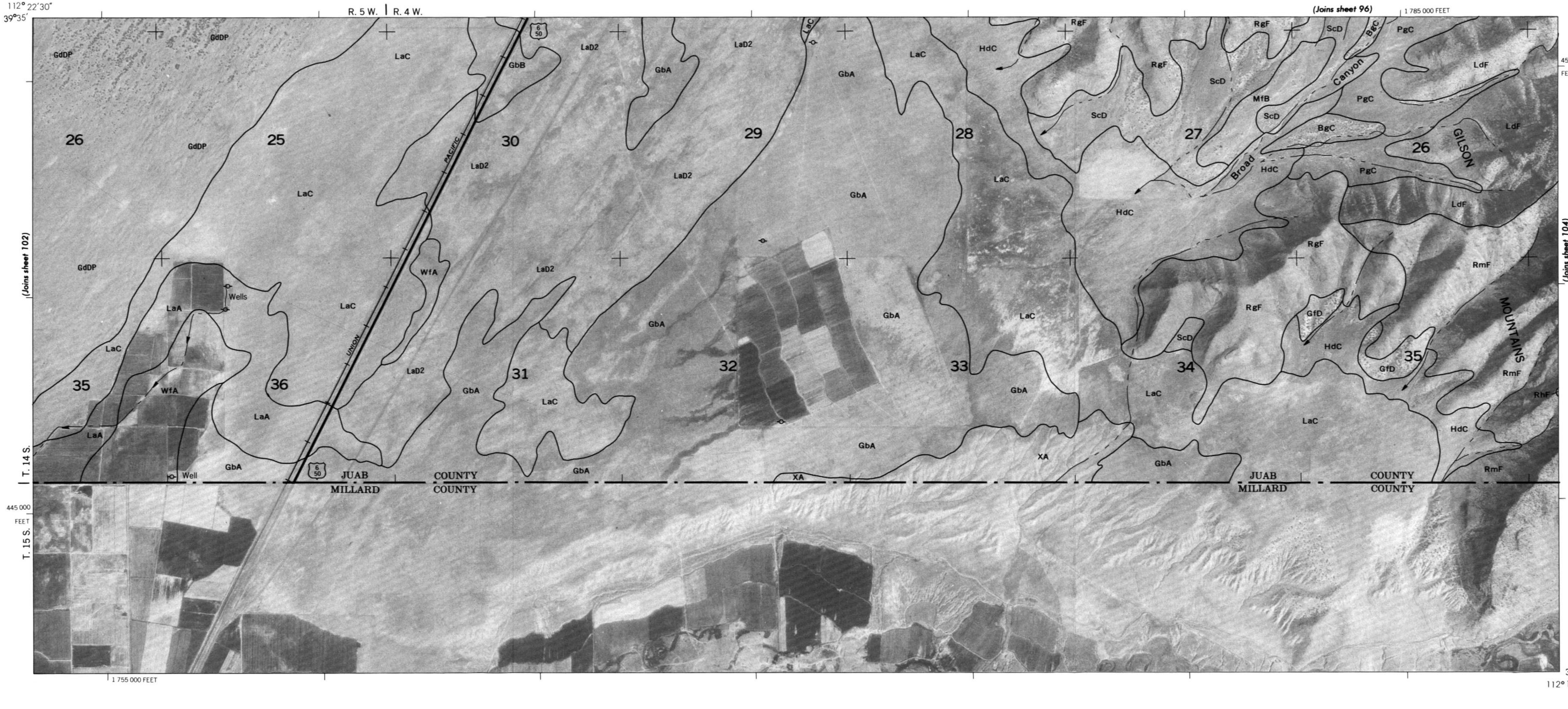
1 0.5 0 1 2 KILOMETERS

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 102



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



1 3/4 1/2 1/4 0 1 2 MILES

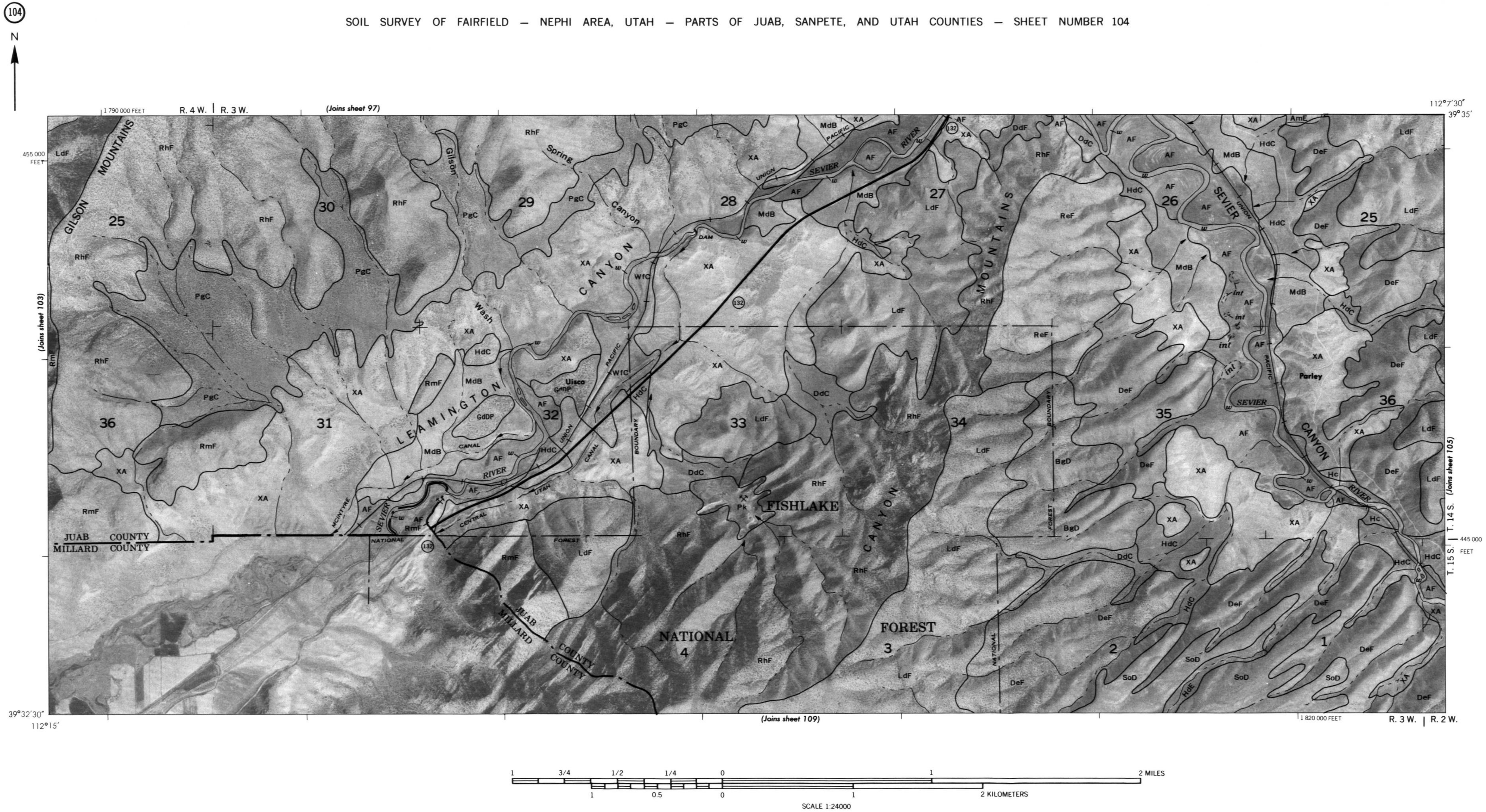
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD-NEPHI AREA, UTAH NO. 103

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 104

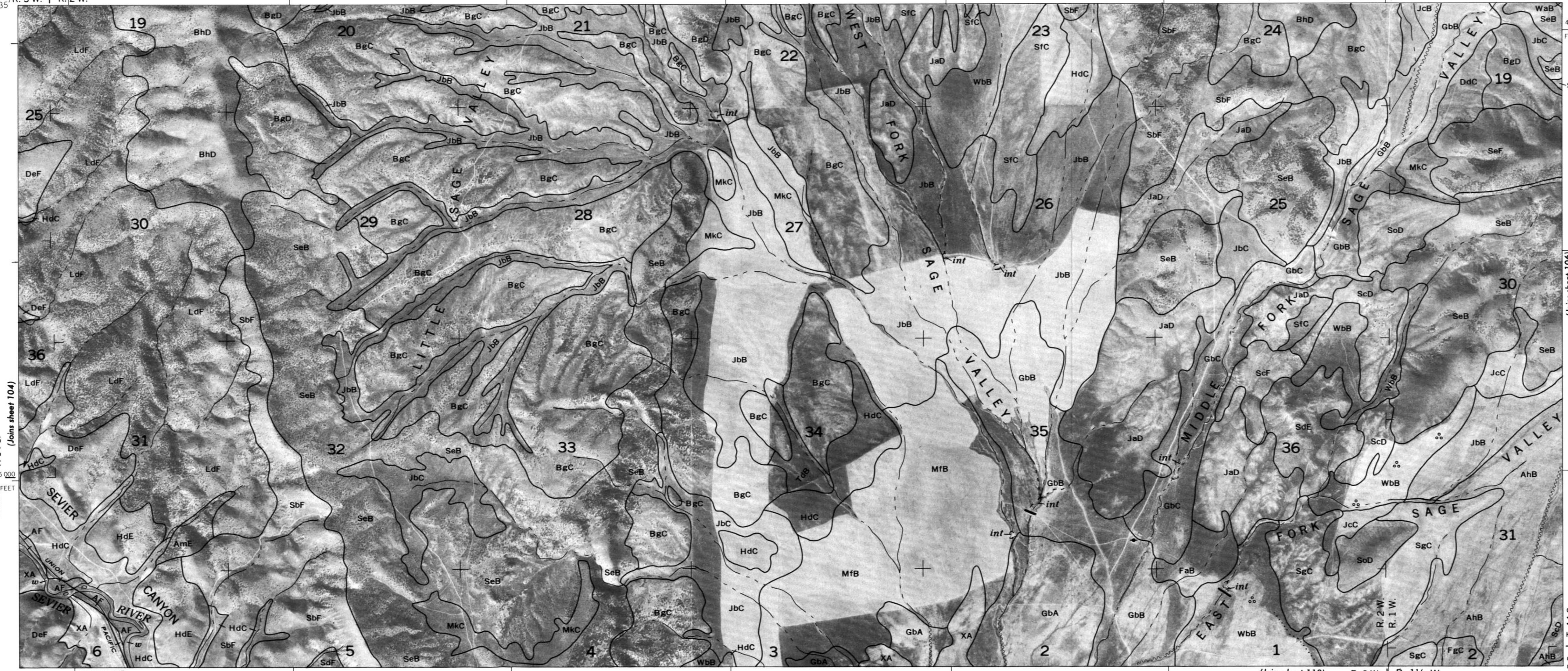


This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

FAIRFIELD-NEPHI AREA, UTAH NO. 105

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 106



1 3/4 1/2 1/4 0 1 2 MILES

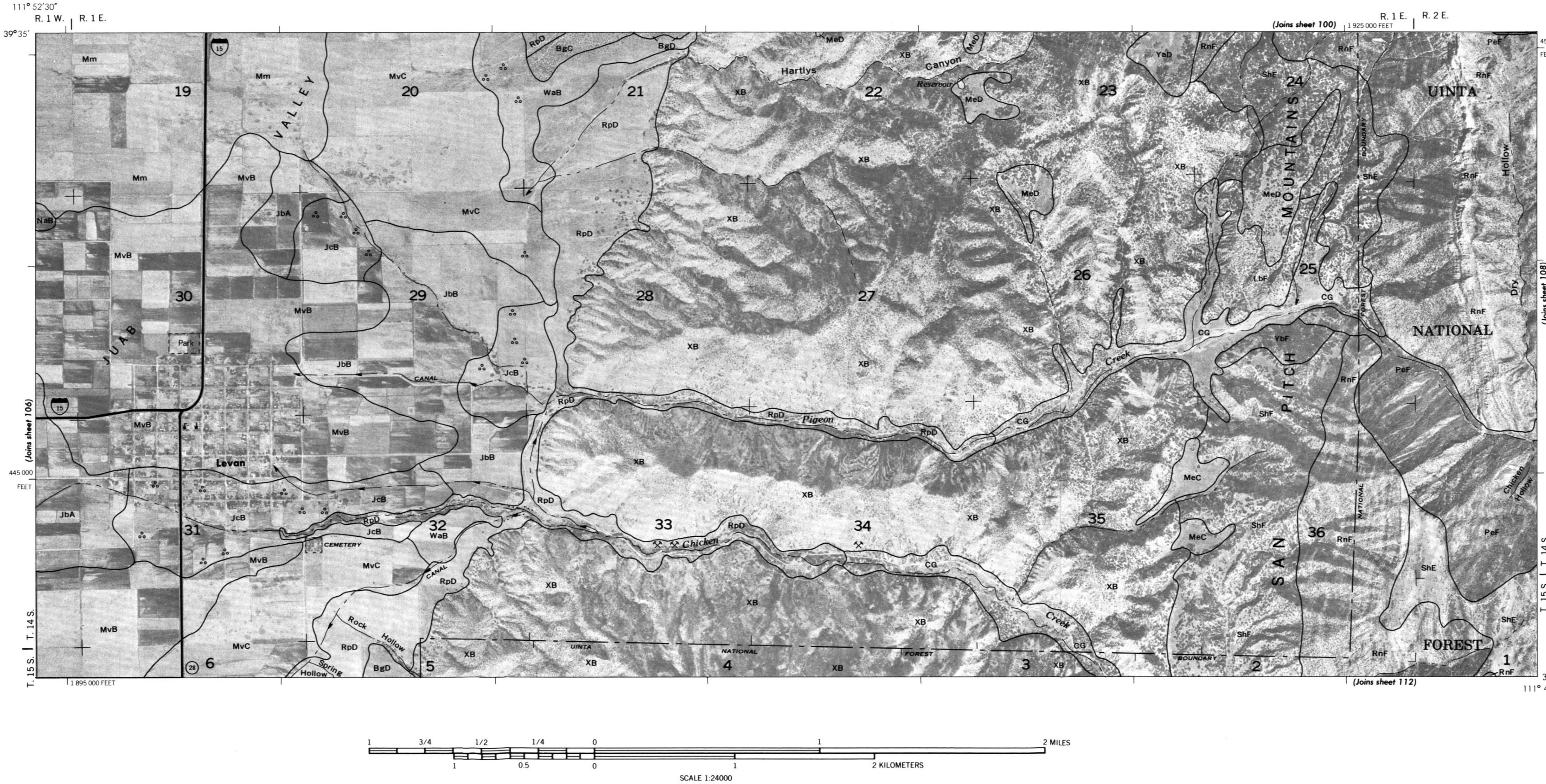
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 106

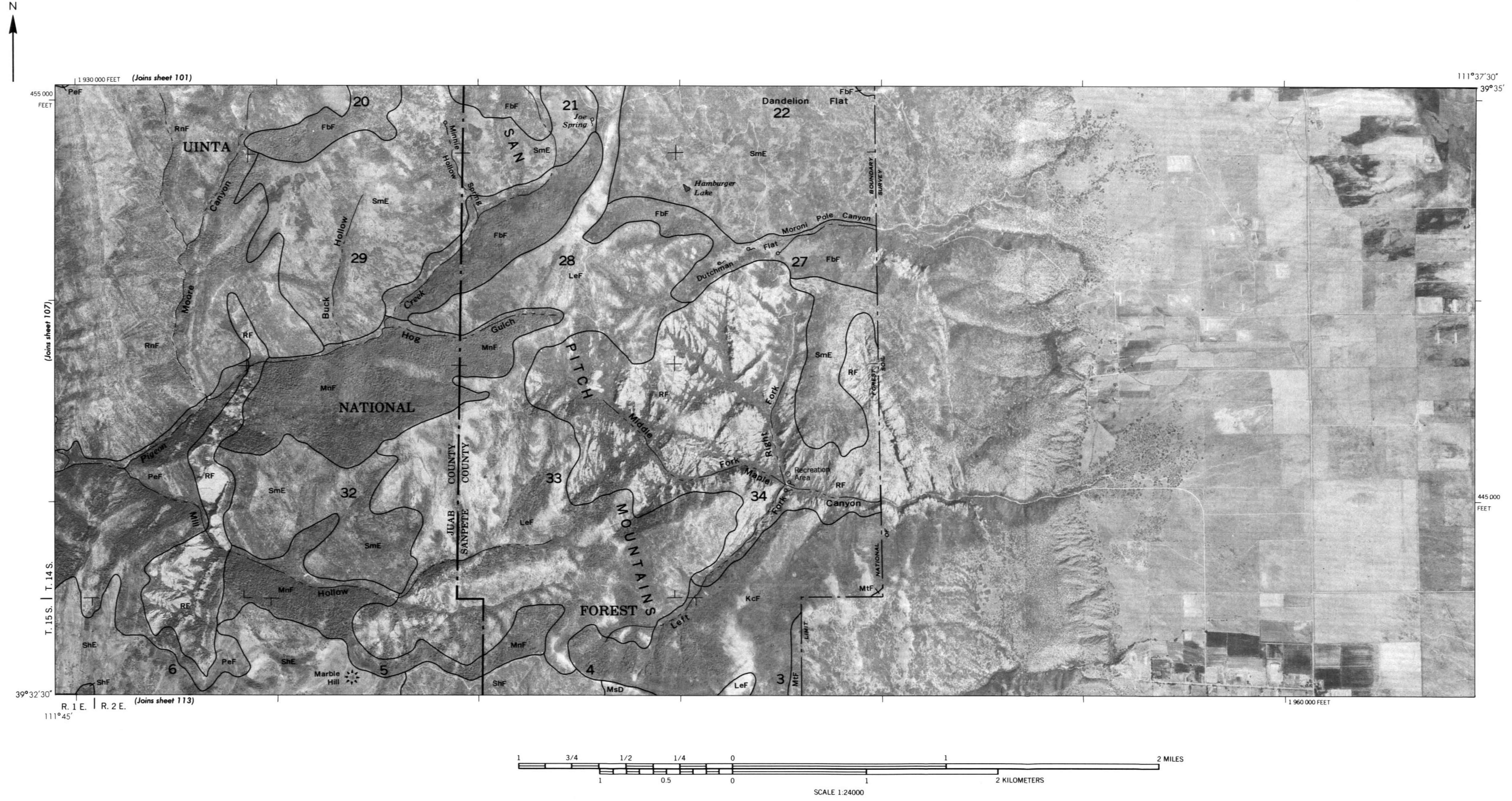
107



FAIRFIELD-NEPHI AREA, UTAH NO. 107

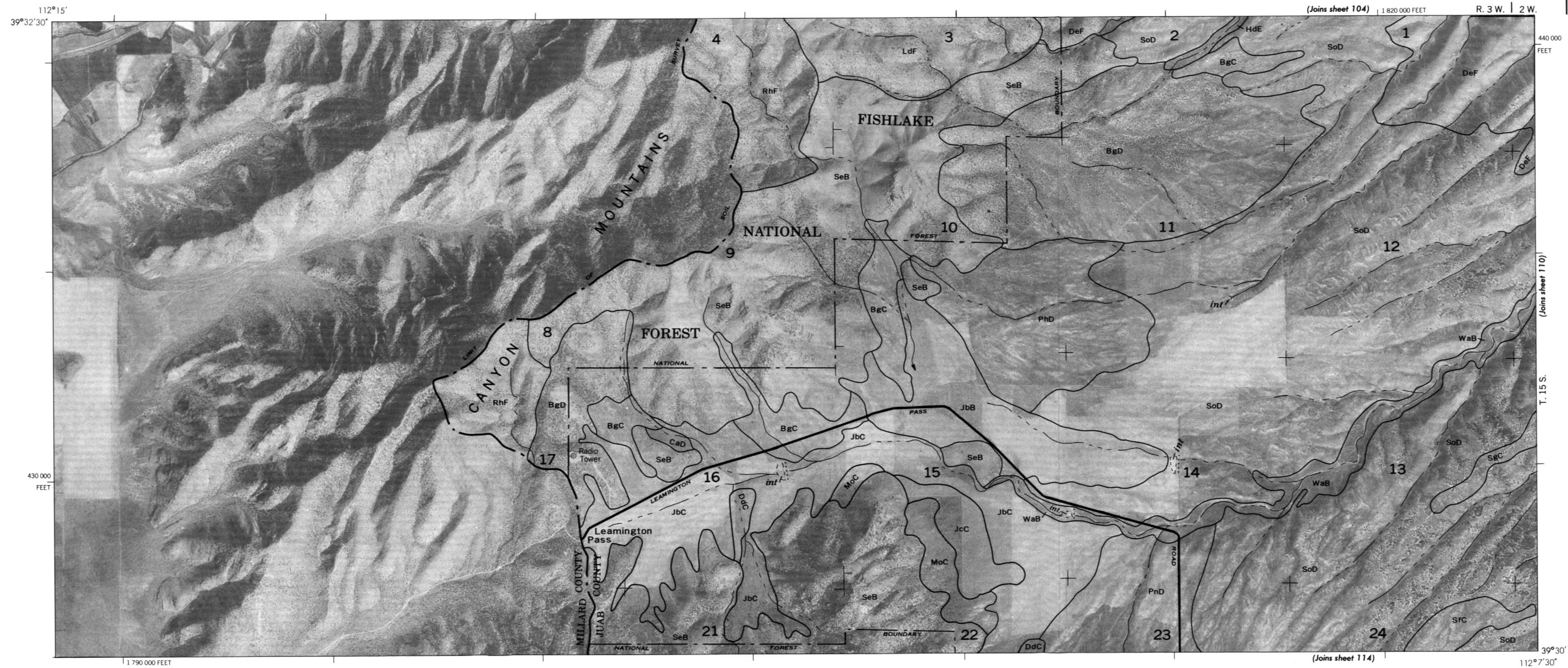
Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 108



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 109

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 110

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



FAIRFIELD–NEPHI AREA, UTAH NO. 111

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

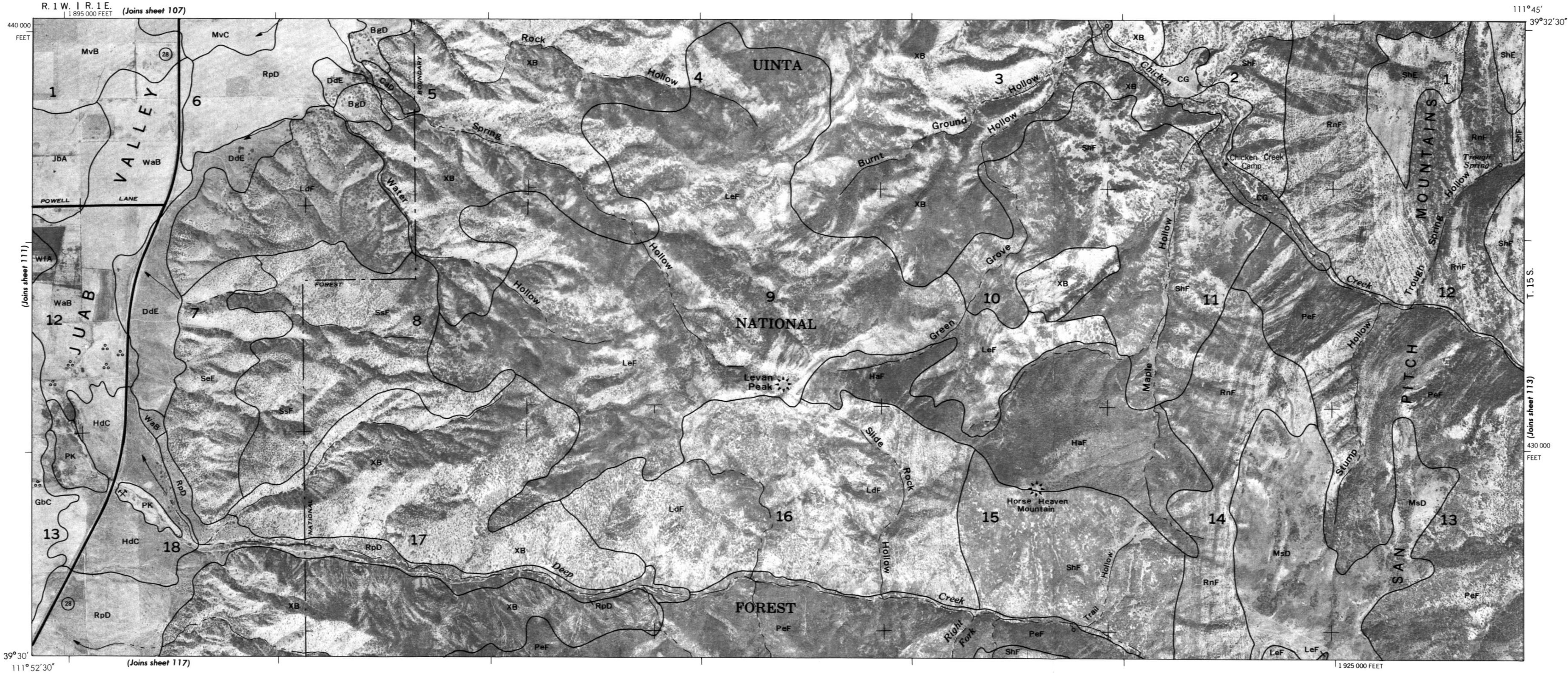
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 112

N



1 — 3/4 — 1/2 — 1/4 — 0 — 1 — 2 MILES

1 — 0.5 — 0 — 1 — 2 KILOMETERS

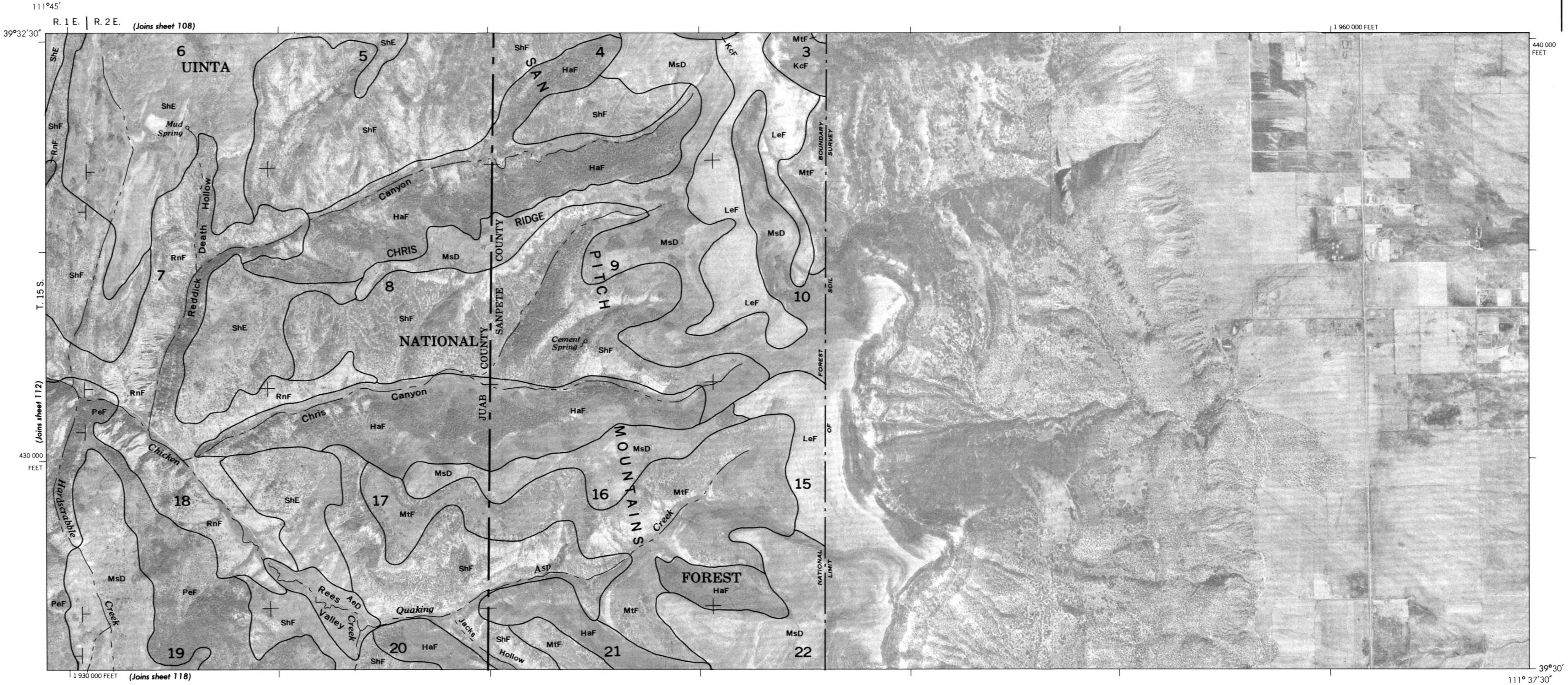
SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

(113)

FAIRFIELD–NEPHI AREA, UTAH NO. 113

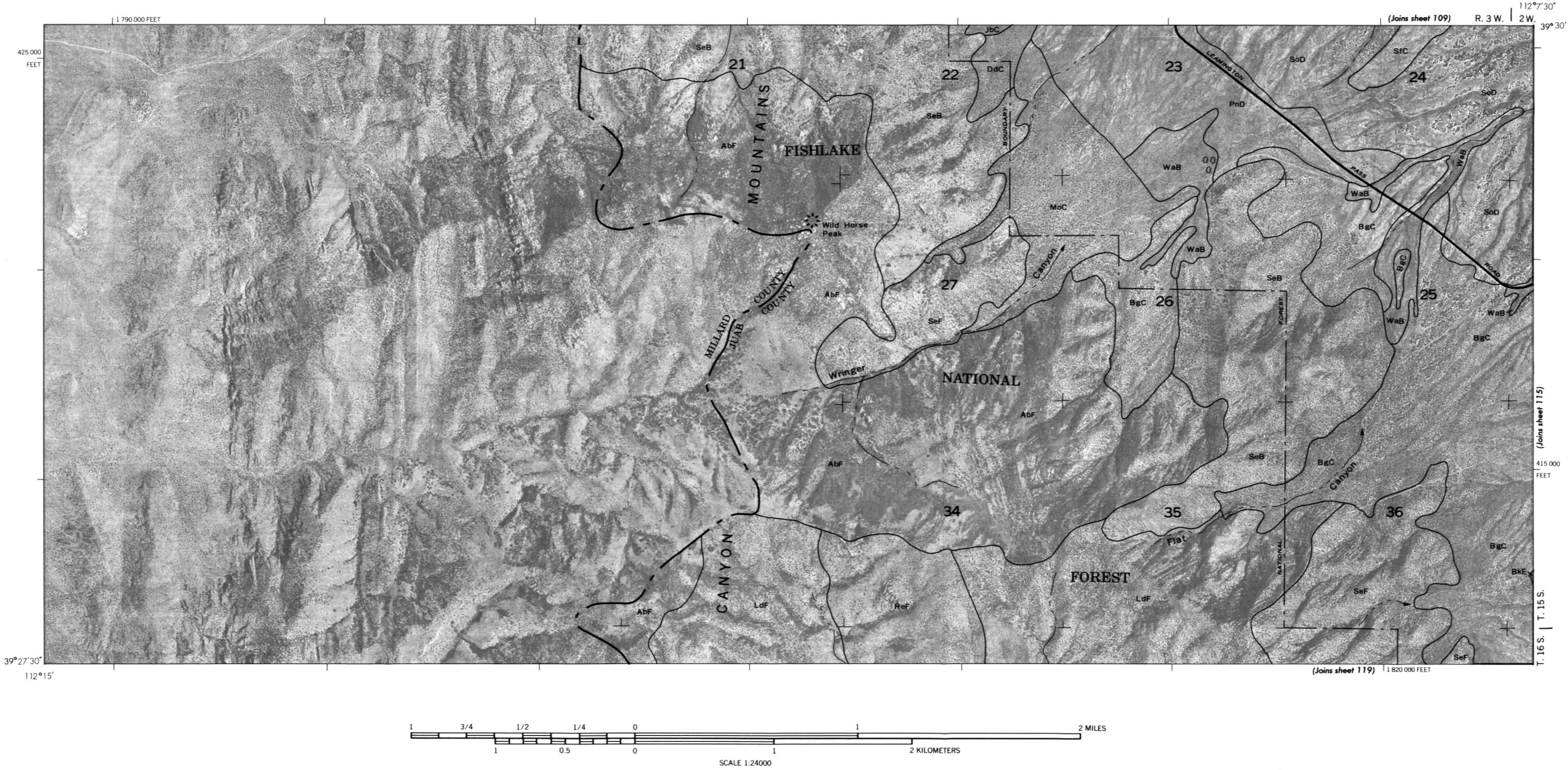
Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SCALE 1:24000

115



1 3/4 1/2 1/4 0 1 2 MILES

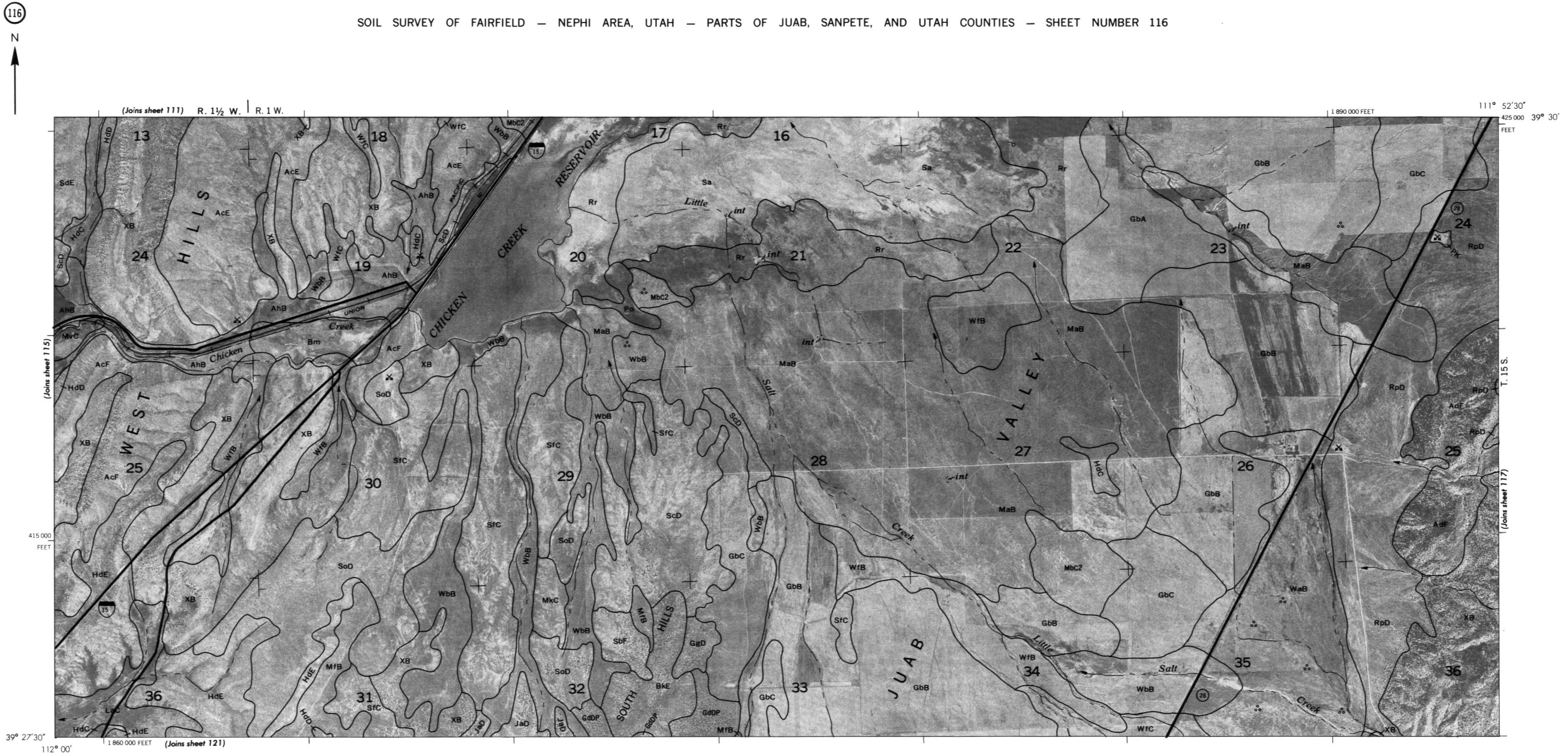
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD-NEPHI AREA, UTAH NO. 115

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 116



1 3/4 1/2 1/4 0 1 2 MILES

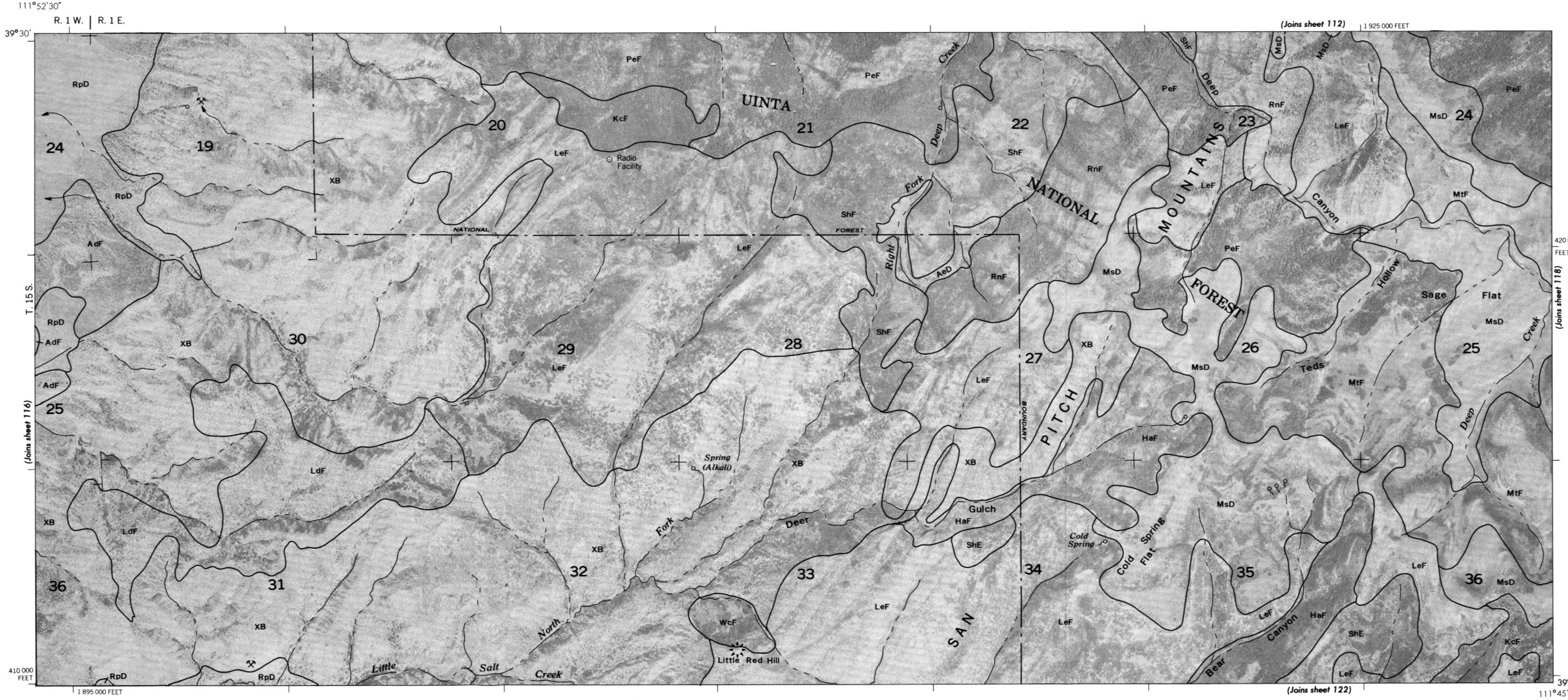
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 116

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 117

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 118



1 — 3/4 — 1/2 — 1/4 — 0 — 1 — 2 MILES

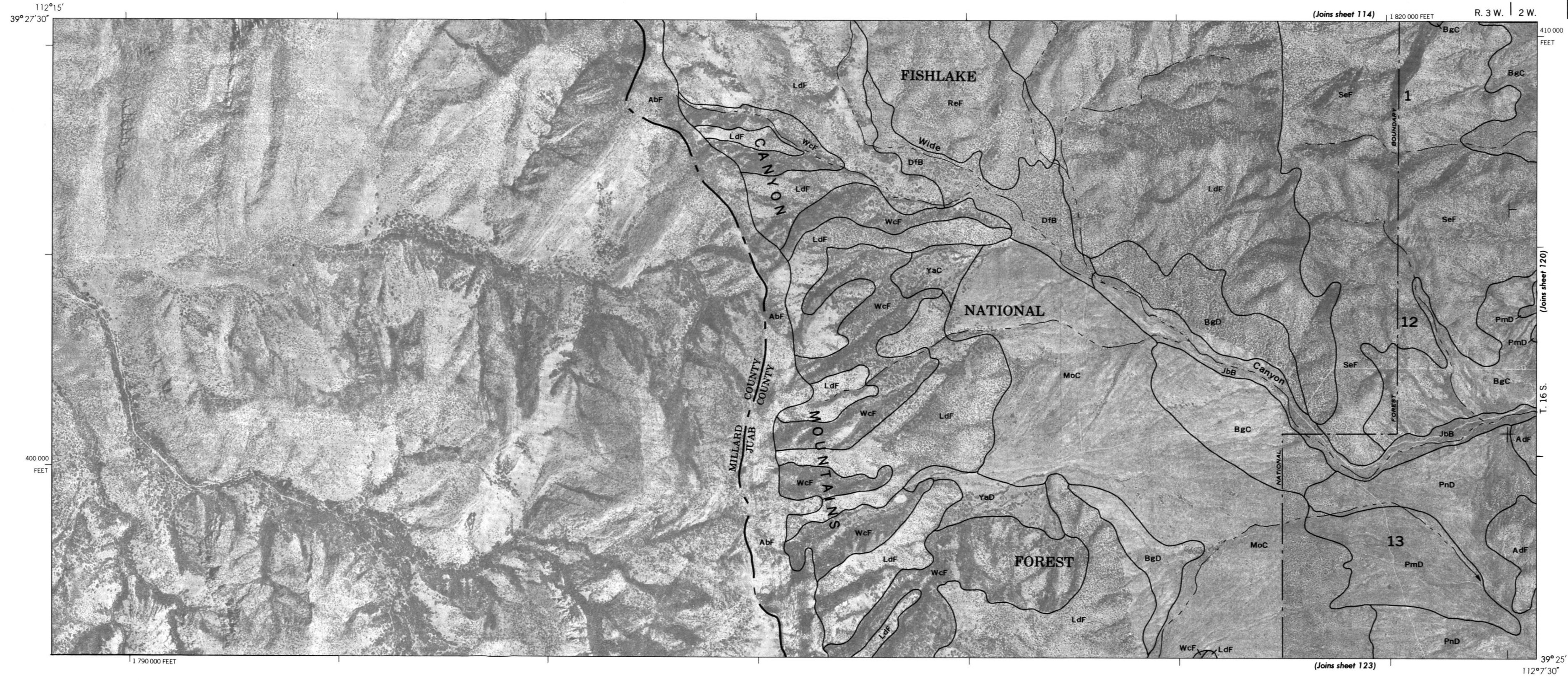
1 — 0.5 — 0 — 1 — 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FAIRFIELD–NEPHI AREA, UTAH NO. 119

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 120



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



1 3/4 1/2 1/4 0 1 2 MILES

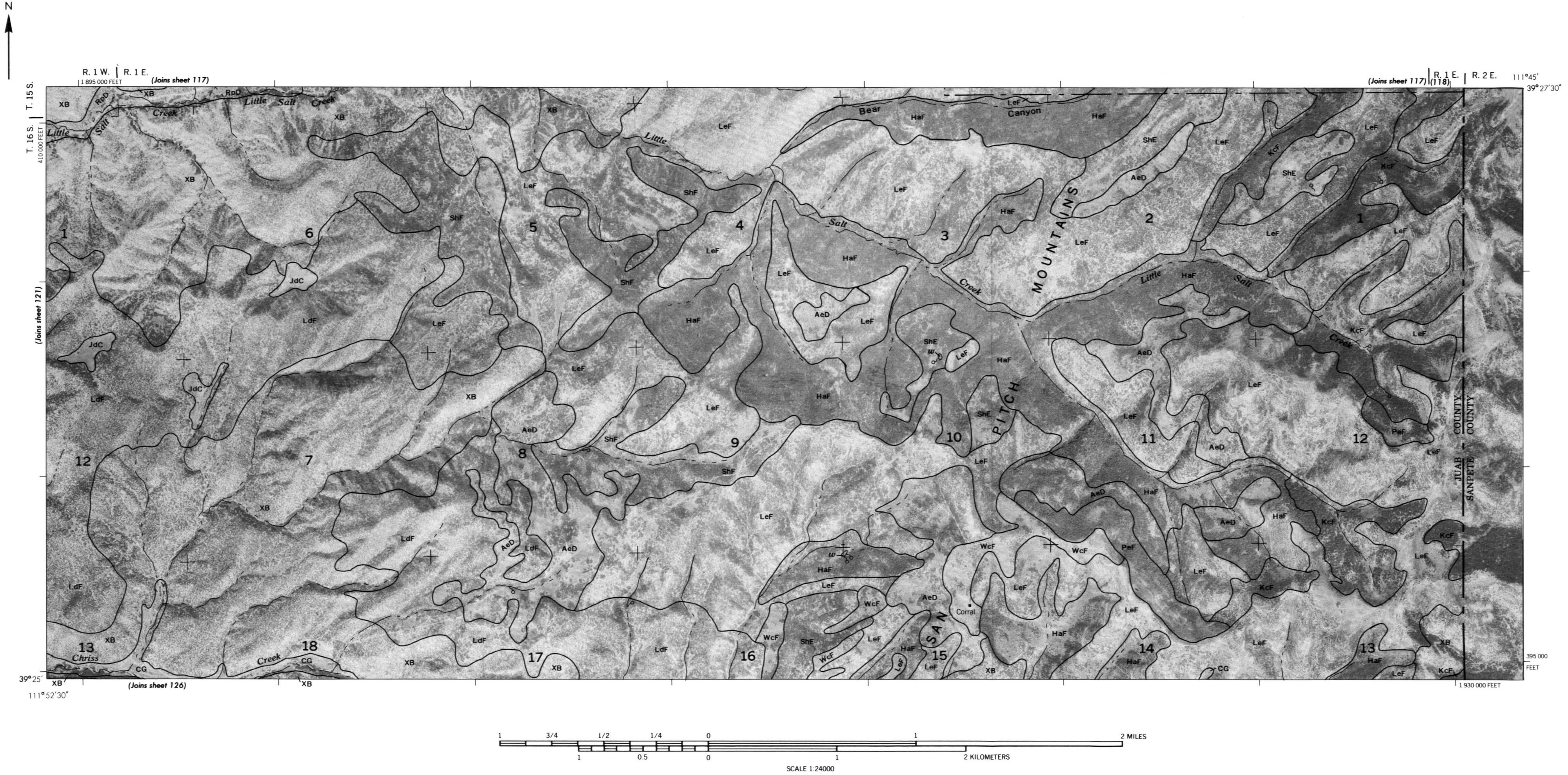
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

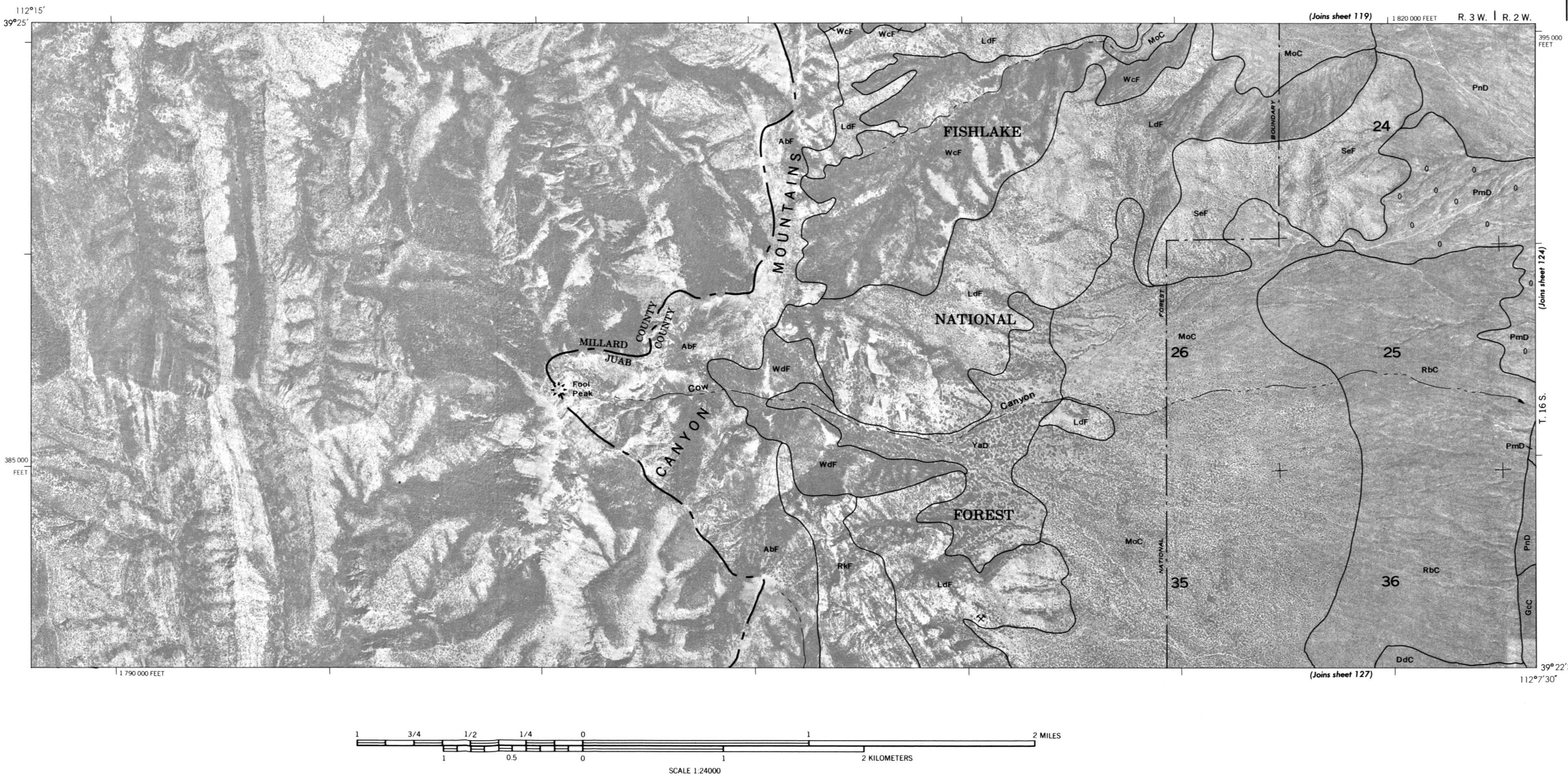
FAIRFIELD–NEPHI AREA, UTAH NO. 121

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 122



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



FAIRFIELD–NEPHI AREA, UTAH NO. 123

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 124



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.



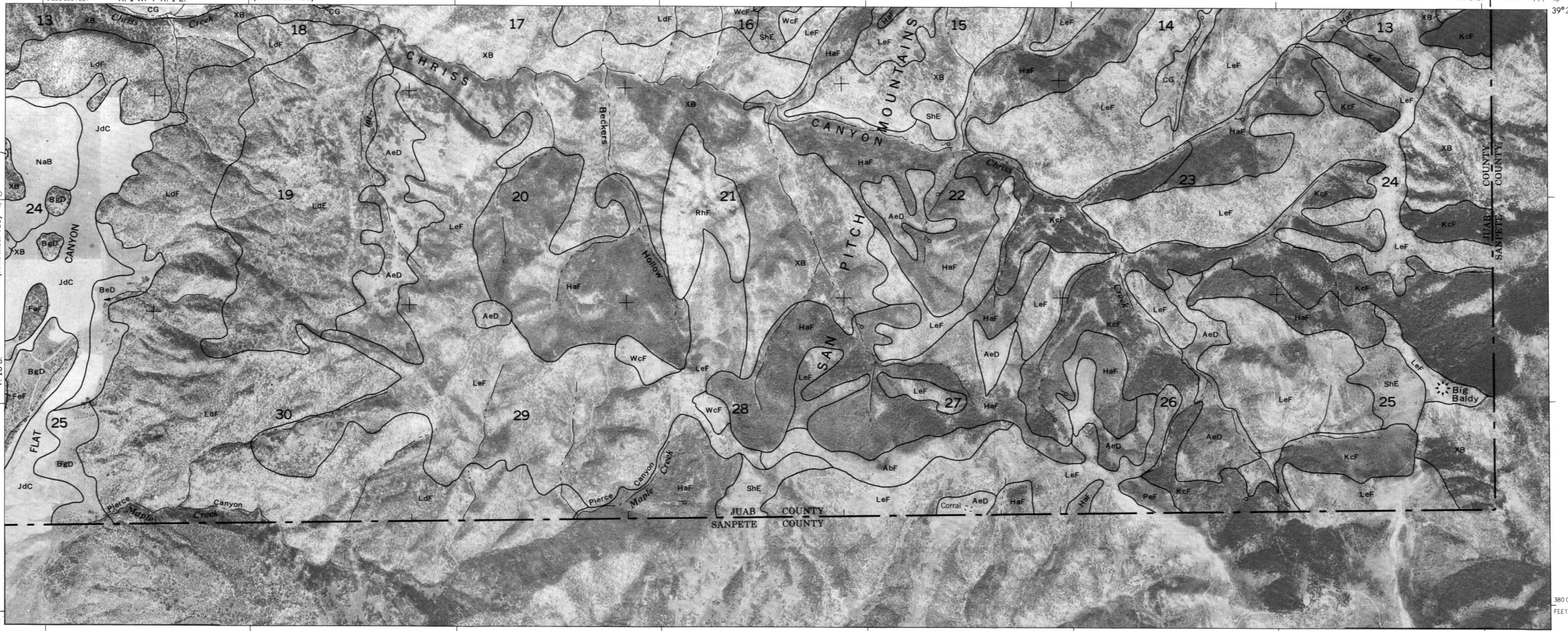
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 126

N

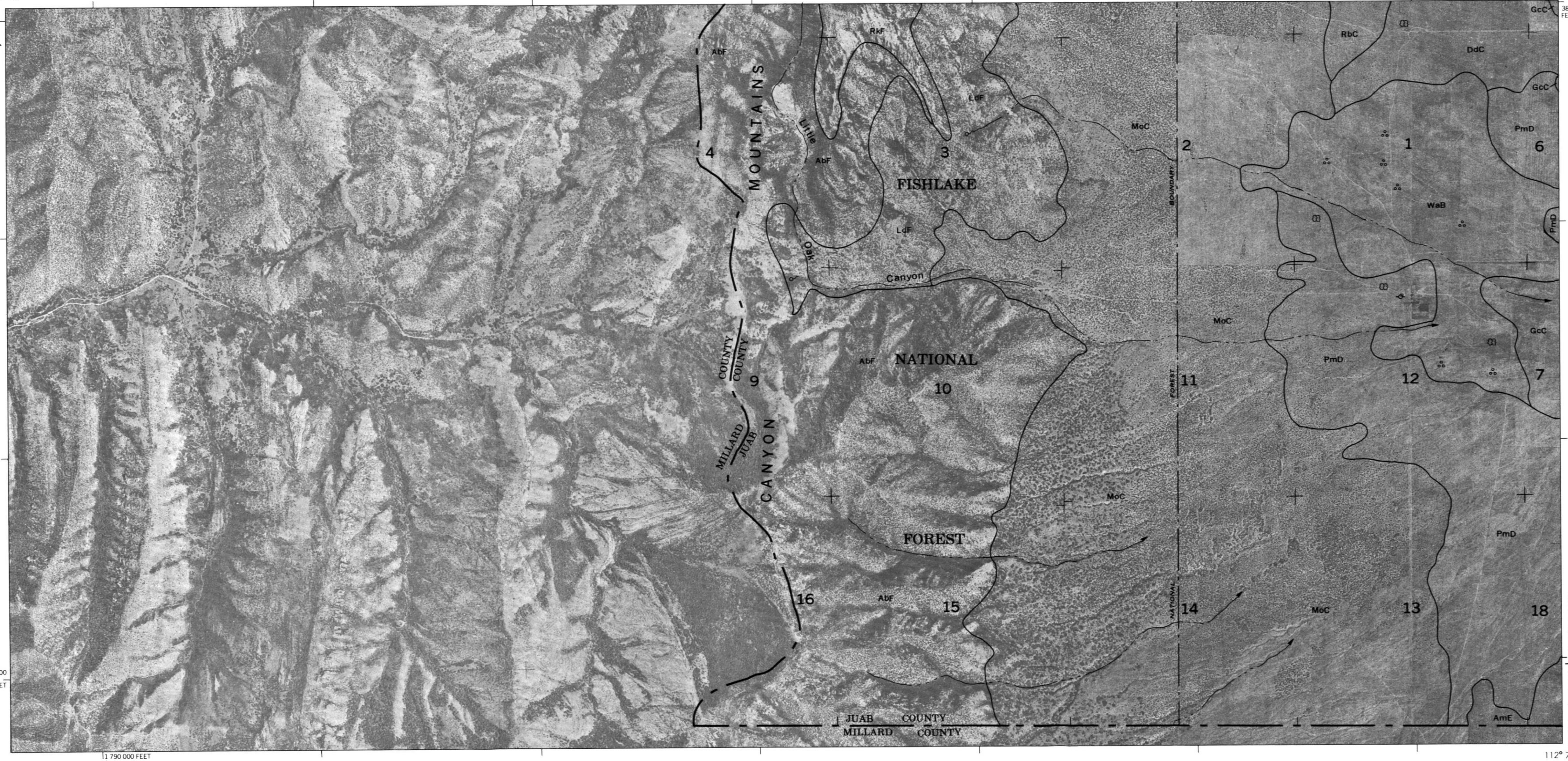


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



SCALE 1:24000

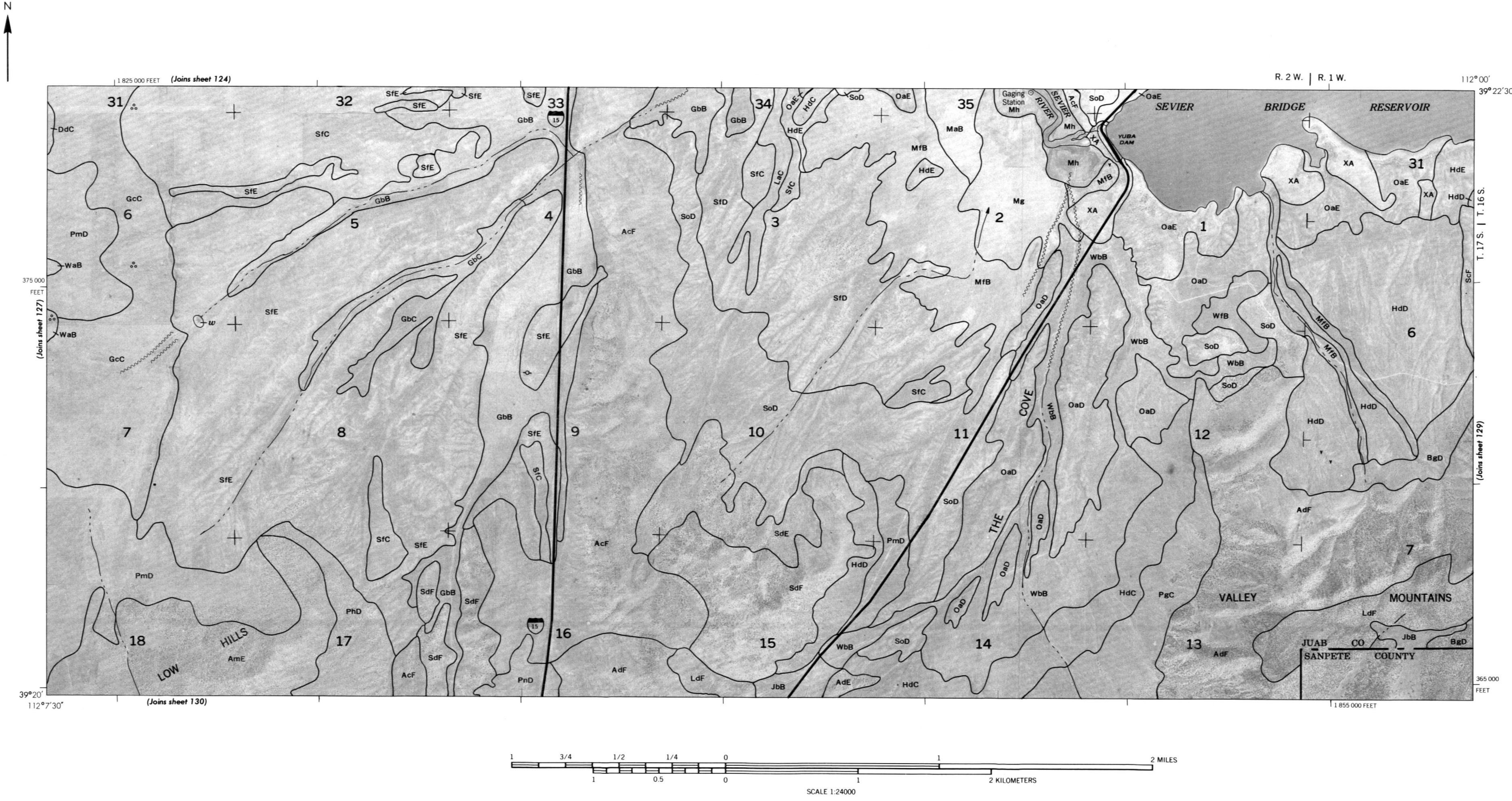
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

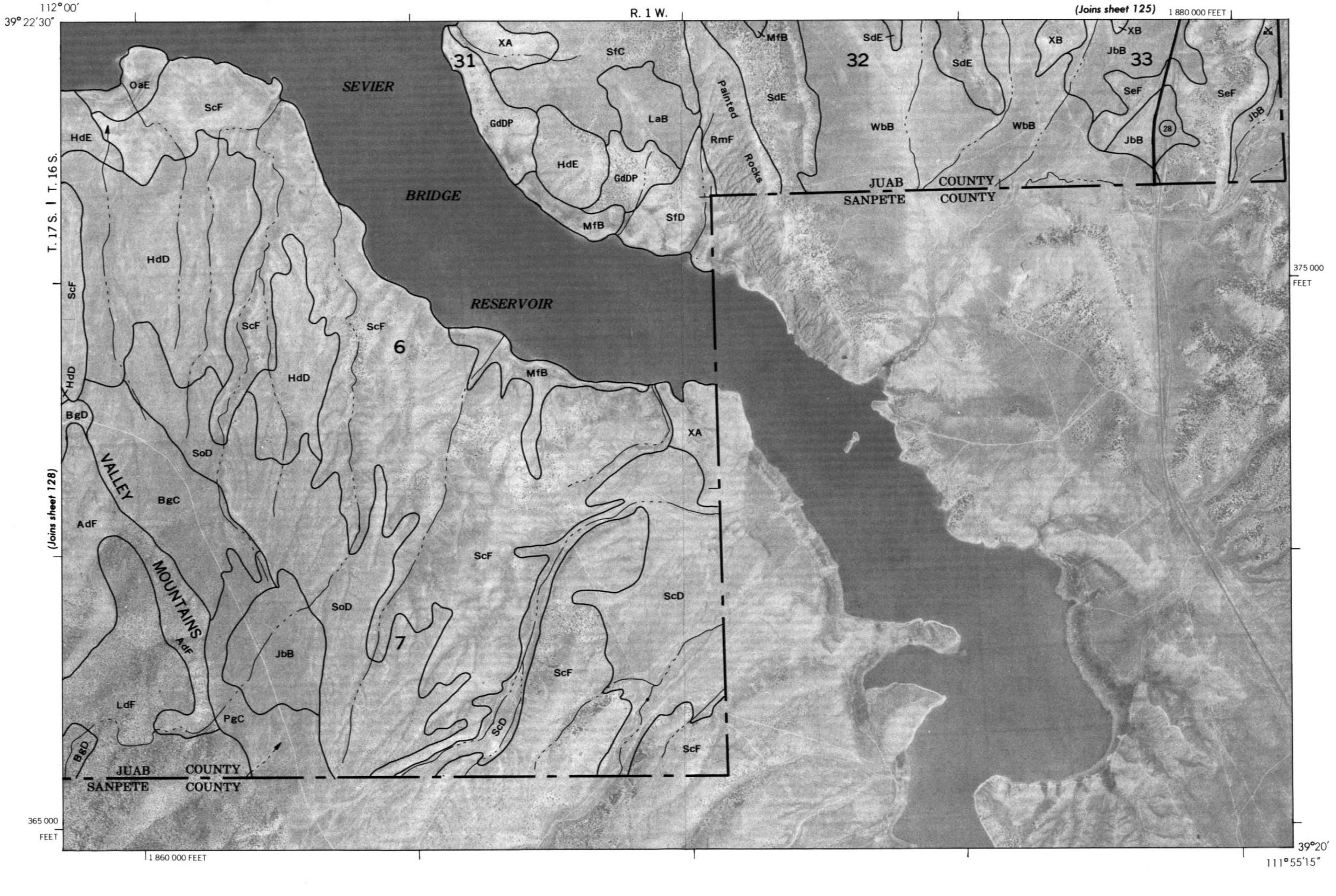
FAIRFIELD–NEPHI AREA, UTAH NO. 127

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 128



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

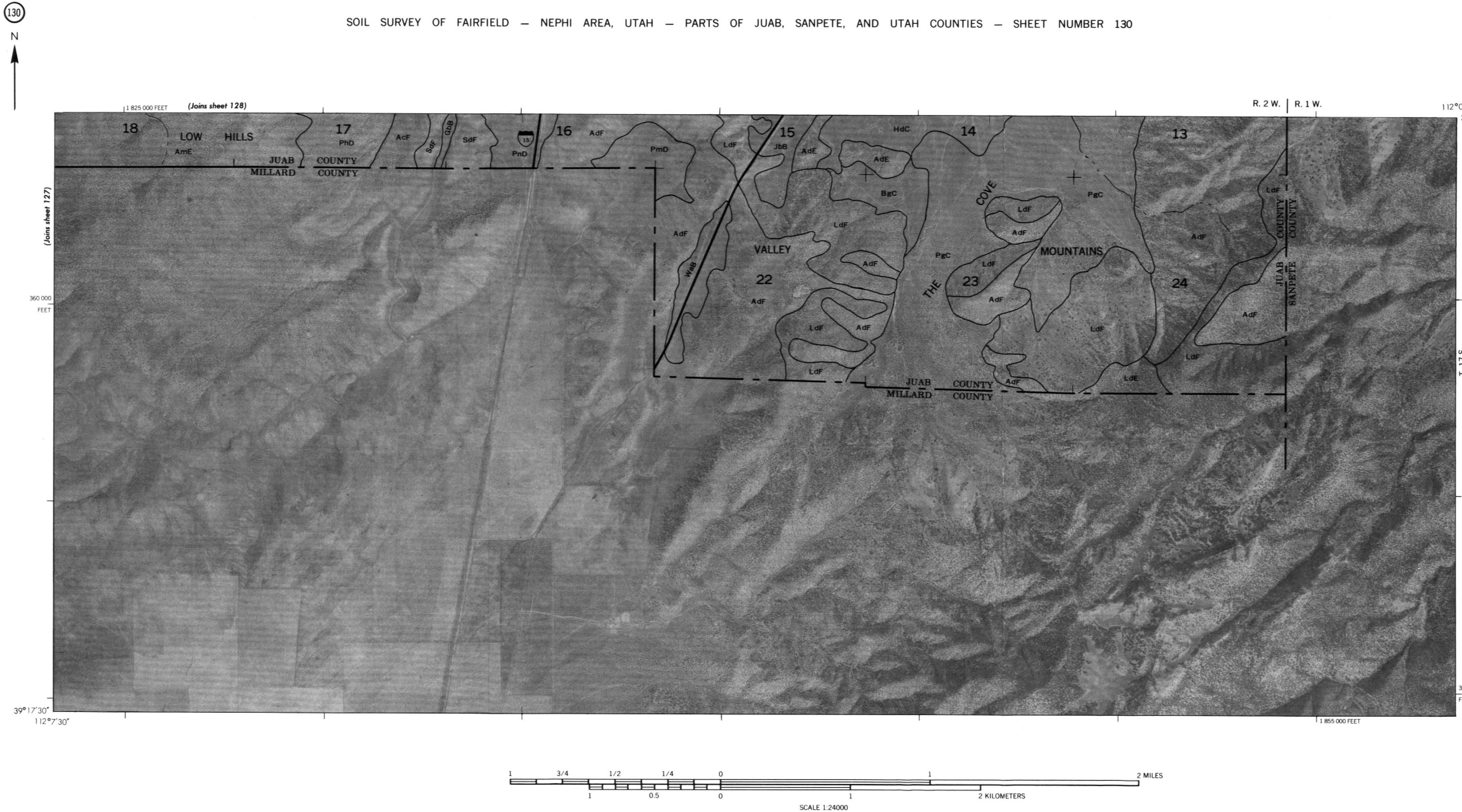
1 0.5 0 1 2 KILOMETERS

SCALE 1:24000

FAIRFIELD–NEPHI AREA, UTAH NO. 129

Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.

SOIL SURVEY OF FAIRFIELD — NEPHI AREA, UTAH — PARTS OF JUAB, SANPETE, AND UTAH COUNTIES — SHEET NUMBER 130



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1975 and 1976 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.